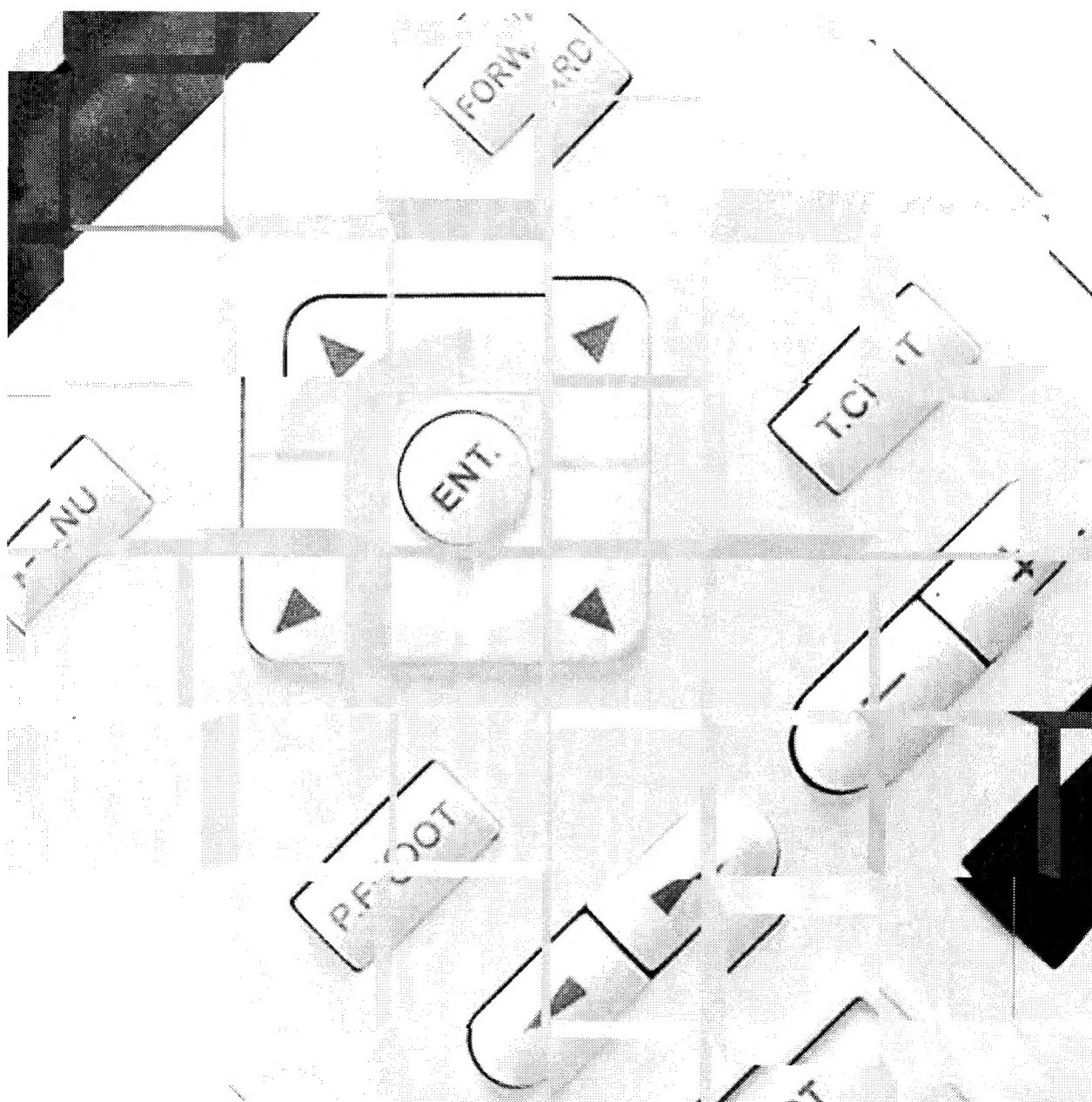


HCS

COMPACT ELECTRONIC EMBROIDERY MACHINE INSTRUCTION BOOK



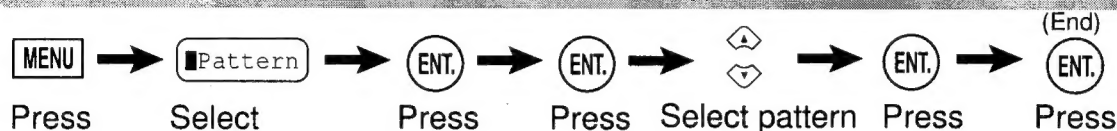
LET'S GET STARTED GUIDE

Please remove this page from the binder and use it with machine operation.

① Card (Load your design from memory card to the machine memory)

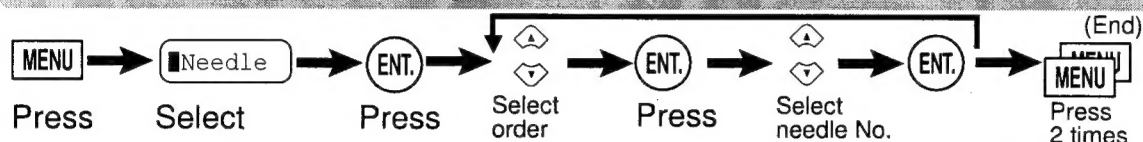


② Pattern (Select pattern from machine memory)



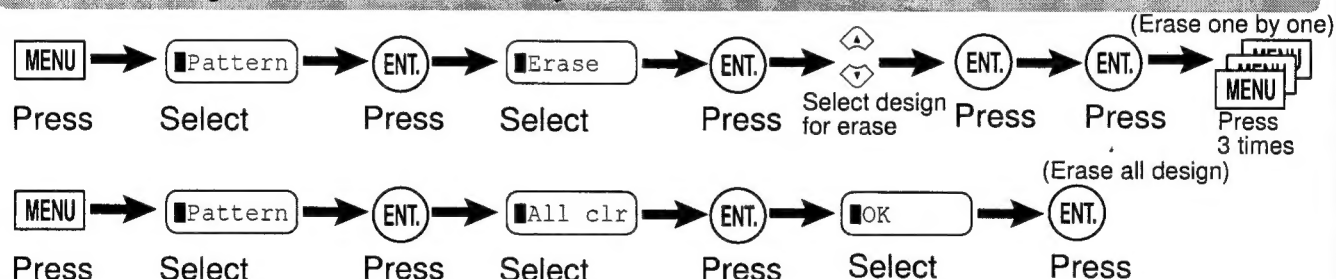
Selected design has last seated function (Needle, Convert,

③ Needle (Color change setting)

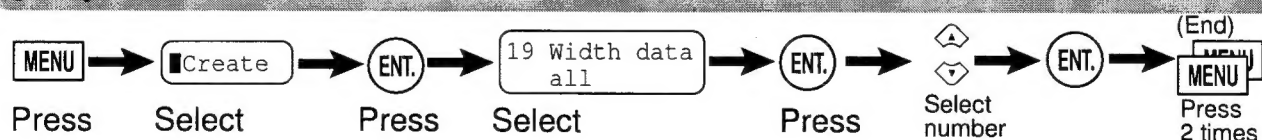


Then, move frame to start point. And press "START" button for machine.

④ Erase Design from Machine Memory

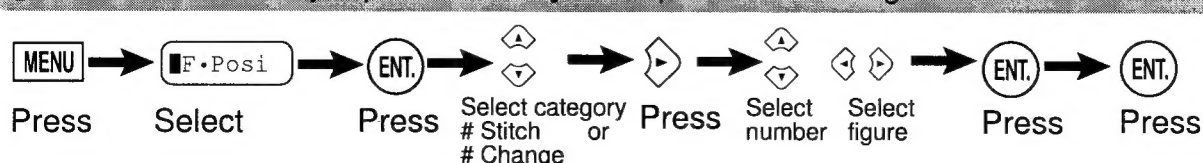


⑤ Adjust "WIDTH" for satin stitches



You can Increase and Decrease the width of only satin stitch In all your design. Limited from -1.0 to +1.0mm.

⑥ "F•Posi" for Direct jump move to any stitch point in the design



Stitch : Number of stitch point as you want to direct jump.

Change: Number of color change point. Frame move to first stitch point in the color.

LET'S GET STARTED GUIDE

7 DRIVE KEY

FORWARD

FORWARD

The embroidery frame advances one stitch when pressed once.
If you keep pressing, the frame goes forward continuously.

PRESSURE FOOT

P.FOOT

You can raise or lower the pressure foot.

THREAD CUT

T.CUT

Machine will cut the upper and lower thread when this button is pressed.

8 DIRECT FRAME MOVEMENT MENU

ORIGINAL POINT RETURN

MENU

Press few
second



Press

Embroidery frame returns to original point (Start point) of the design, and stitch to start sewing returns to top of design data.

TOP

MENU

Press few
second



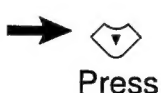
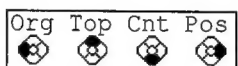
Press

Position to start sewing returns to top of embroidery data.

FRAME CENTER

MENU

Press few
second



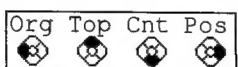
Press

Move embroidery frame position to be the center, and position to start sewing returns to top of design data.

POSITION RETURN

MENU

Press few
second



Press

If you move the embroidery hoop in the middle of a design, embroidery frame return to previous position.

If you need more detail or other function, Please see instruction book.

IMPORTANT SAFETY INSTRUCTIONS ..	1-1
WARNING MARKS, LABELS, MEANINGS AND LOCATION ..	1-2
SETTING UP THE MACHINE	
Remove the machine from box	2-1
Accessories	2-2
Assemble machine kit	2-3
Machine installation	2-4
MAIN PARTS	3-1
HOW TO READ THESE INSTRUCTIONS	3-3
MESSAGE	3-4
LET'S TURN ON THE MACHINE	
How to turn on the machine	3-5
If the display is not clear	3-5
Calendar and clock setting	3-6
FUNCTION OF THE CONTROL BOX	3-7
CONTROL MENU	3-9
INSERTING A NEEDLE	4-1
SELECT NEEDLES AND THREADS	4-2
BACKING MATERIALS	4-3
BOBBIN WINDING	
Winding the bobbin	4-4
Removing the bobbin	4-5
Inserting the bobbin	4-5
Adjusting bobbin thread tension	4-5
Inserting the bobbin case	4-5
THREADING THE MACHINE	
How to thread upper thread	4-6
MACHINE SETTINGS	5-1
PREPARATION OF PATTERN DATA	
Connect with your PC	5-4
Read embroidery pattern data from the PC	5-4
Read embroidery pattern data from memory card ...	5-5
Select embroidery pattern from memory	5-7
Erase embroidery pattern from memory	5-8
Erase all designs	5-9
How to select monogram letters	5-10
SETTING AUTOMATIC COLOR CHANGE ...	5-15

SEWING USING THE TUBULAR EMBROIDERING FRAME

Installing and removing the frame base	6-1
How to hoop	6-2
Putting the hoop in the machine	6-3
Starting to sew	6-4

CAP FRAME (OPTION)

Cap frame setting	7-1
Changing the needle plate	7-2
Installing and removing the cap drive frame	7-3
Normal cap frame	7-5
Wide cap frame	7-8
Starting to sew	7-B

ADJUSTING THE THREAD TENSIONS .. 8-1

SEWING

What to do if the thread breaks while sewing	9-1
Stopping and resuming sewing	9-1
Loss of power while embroidering	9-2
Moving the hoop while embroidering then returning to the correct location (Position)	9-3
Moving to the beginning position of pattern (Origin)	9-3
Going back to the start of design data (Top)	9-4
Placing the design in the center of the selected embroidery frame (Center)	9-4
Rotating and mirroring designs (Convert)	9-5
Starting from a midpoint of a design (F.Posi)	9-6

SPECIFICATIONS • MAINTENANCE

Specifications	10-1
Oiling	10-1
Cleaning of rotary hook	
Cleaning of thread cutting knife	10-2

ERRORS AND WHAT TO DO

INITIALIZING OF MACHINE SETTINGS

Initializing of machine system	11-1
Initializing of machine speed	11-1

CHANGE OF THREAD BREAK DETECTION ... 11-3

HELPFUL HINTS

EMBROIDERY TERMS

BUILT-IN FONT LIST

IMPORTANT SAFETY INSTRUCTIONS

1-1

When using the embroidery machine, basic safety precautions should always be followed, including the following.

Read all instructions before using.



DANGER - To reduce the risk of electric shock:

1. Never leave unattended when plugged in. Always unplug this machine from the electric outlet immediately after using and before cleaning.



WARNING - To reduce the risk of burns, fire, electric shock, or injury to persons:

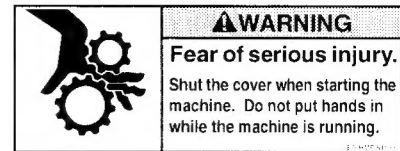
1. Do not allow to be used as a toy. Close attention is necessary when this embroidery machine is used by or near children.
2. Use this embroidery machine only for its intended use as described in this manual. Use only attachments recommended by the manufacturer as contained in this manual.
3. Never operate this embroidery machine if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Return the embroidery machine to the nearest authorized dealer for examination, repair, electrical or mechanical adjustment.
4. Never operate the embroidery machine with any air openings blocked. Keep ventilation openings of the embroidery machine free from the accumulation of lint, dust, and loose cloth.
5. Never drop or insert any object into any opening.
6. Do not use outdoors.
7. Do not operate where aerosol (spray) products are being used or where oxygen is being administered.
8. To disconnect, turn the power switch to the off position, then remove plug from outlet.
9. Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
10. Keep fingers away from all moving parts. Special care is required around the embroidery machine needle.
11. Do not use bent needles.
12. Do not pull or push embroidery frame while stitching. It may deflect the needle causing it to break.
13. Switch the embroidery machine off when making any adjustments in the needle area, such as threading needle, changing needle, threading bobbin.
14. Do not remove the machine plastic covers.
15. Do not expose the machine or machine plastic case to sunlight directly. Also, do not keep it in a very warm or damp place.

SAVE THESE INSTRUCTIONS

Servicing should be performed by an authorized service representative.

Warning marks, Labels, Meanings and Location 1-2

Risk of trapping hazard;



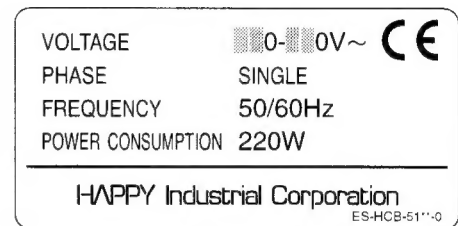
Trapping hazard whereas this label can be found;



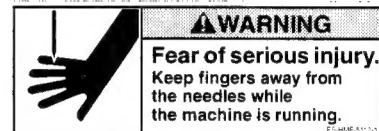
Power Supply Voltage sticker

Risk of electrical shock or fire if this mark and the selected power to be provided is ignored!

Please always make sure that the external power supply via main plug meets exactly the specified Machine power.



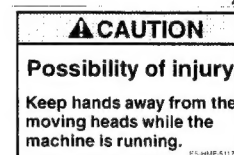
Stitching hazard on all needles;



Electrical hazard on all electrical components;



Trapping hazard on moving heads;



Risk of trapping hazard on frame and carriage;



We recommend unpacking should be done where it has enough room.

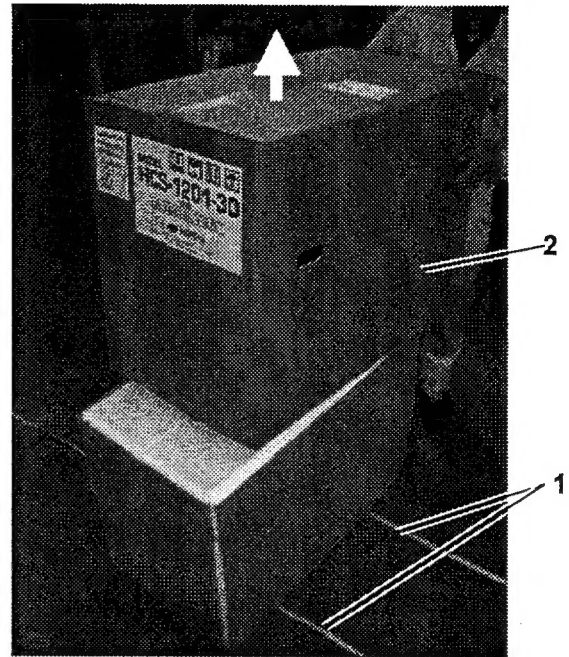
! CAUTION : To prevent accidents.

The machine is quite heavy for one person to carry. Please use two persons when unpacking or carrying.

! CAUTION : To avoid troubles.

Make sure to hold bottom of the machine body when removing from the box. Do not hold any other place. (bed, moving head, control box etc.).

- Confirm all the accessories are contained when unpacking.



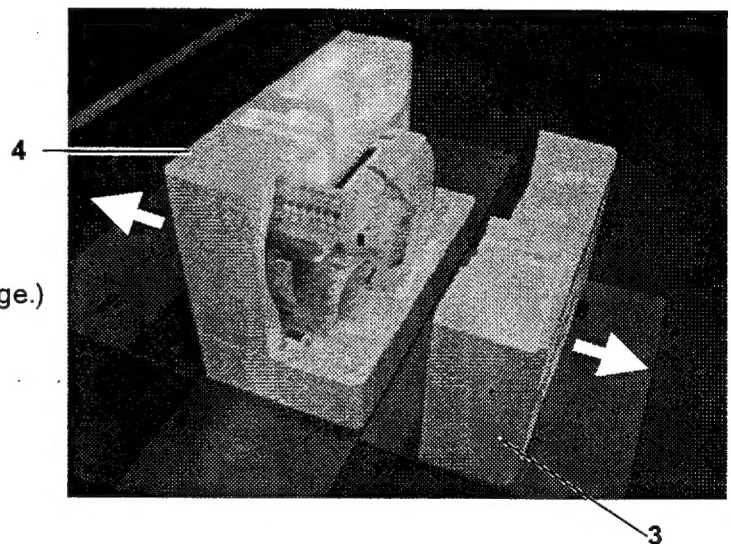
▼ Remove the machine from box

1. Remove 2 straps [1] from the carton.

2. Lift the box (upper) [2] to remove.

3. Take out the accessories. (Refer to the next page.)

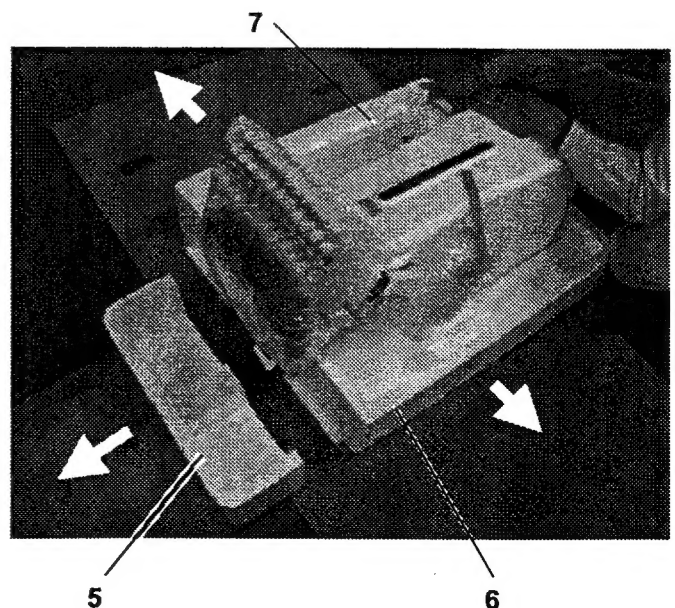
4. Take out the styrene foam (right) [3] and (left) [4].



5. Take out the styrene foam (lower front) [5], (lower right) [6], and (lower left) [7].

* Be careful not fall down the machine, tilt the machine slightly when taking out the styrene form (lower right) and (lower left).

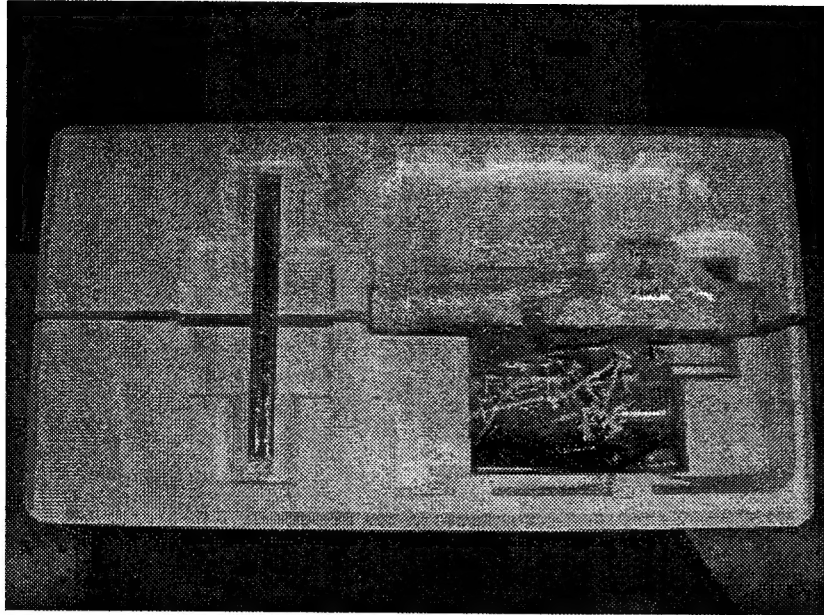
6. Carry the machine to installation location.



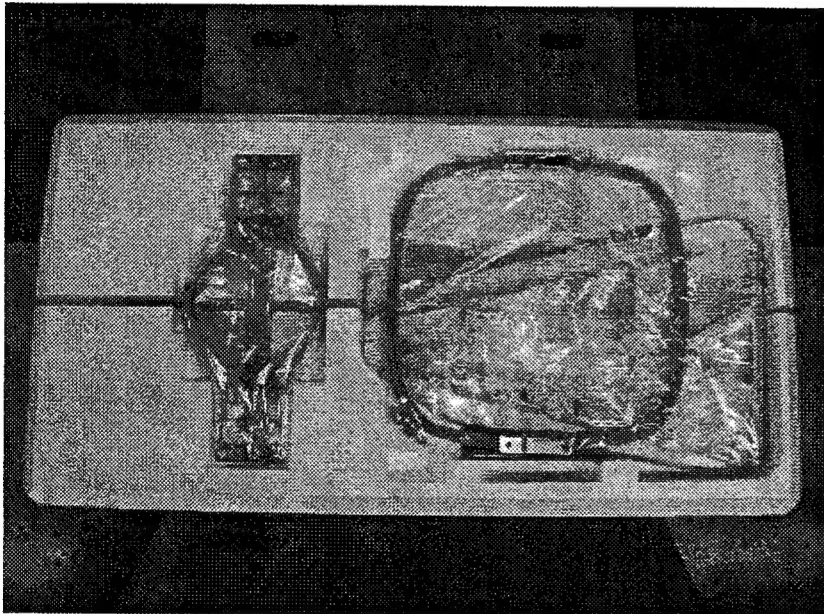
- Please keep those packing materials in case of necessary for repair or other reasons.

- Packing procedure is the reverse from unpacking procedure.

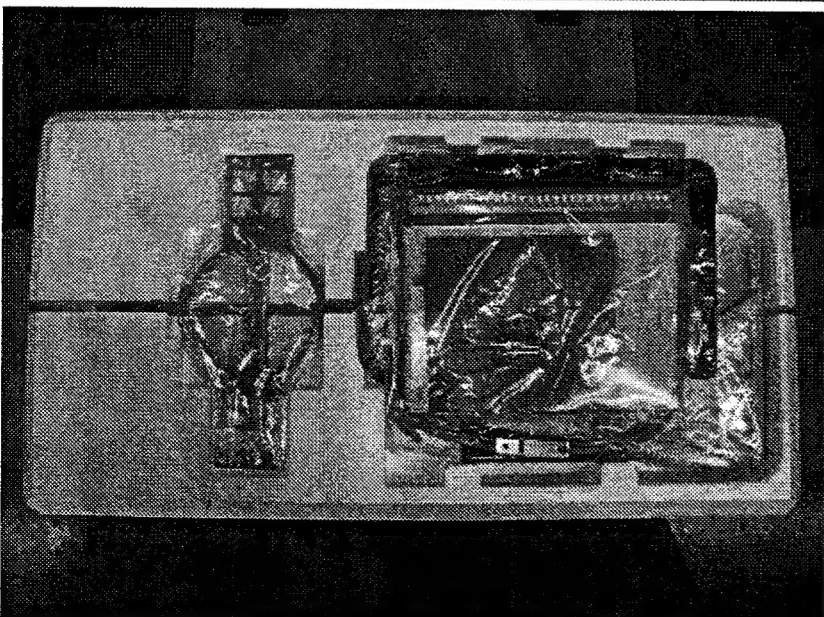
Placement of Accessories



- Carriage
- Spool felt (13 pieces)
- Serial cable
- Power line cord ass'y
- Tool set
- Needle (10 pieces)
- Bobbin (2 pieces)
(1 piece set to rotary hook)
- Fuse (6A)
- Oiler
- Thread guide pillar (2 pieces)
- Thread stand pin (13 pieces)
- Wave washer (13 pieces)



- Embroidery frame (round)
- Embroidery frame (square)
- Thread stand
- Thread guide bracket



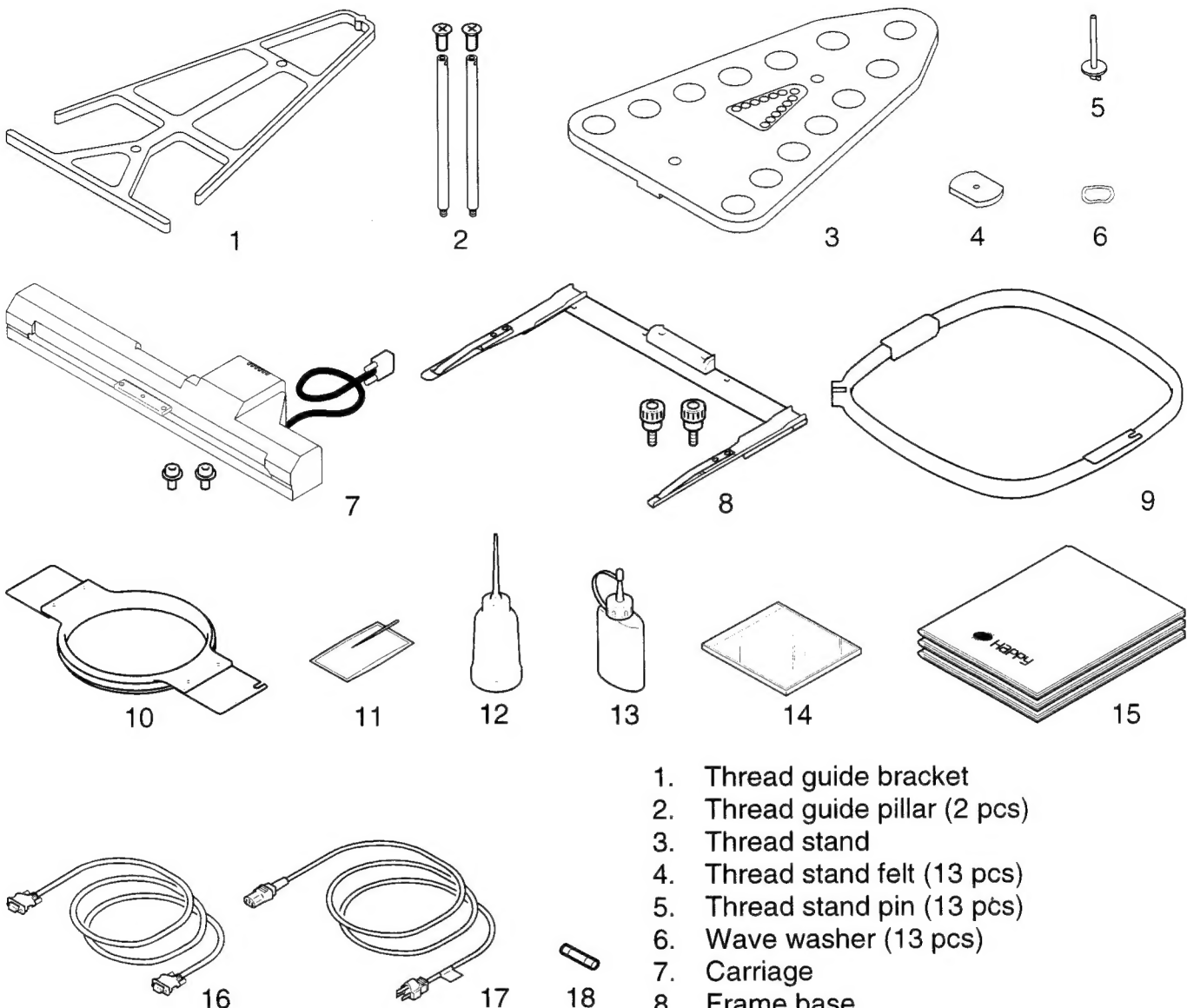
- Frame base
- CD-ROM (Happy Link Software)
- Instruction book
(Embroidery machine /
Happy Link Software)
- Parts list book
- Embroidery sample

SETTING UP THE MACHINE

2-2

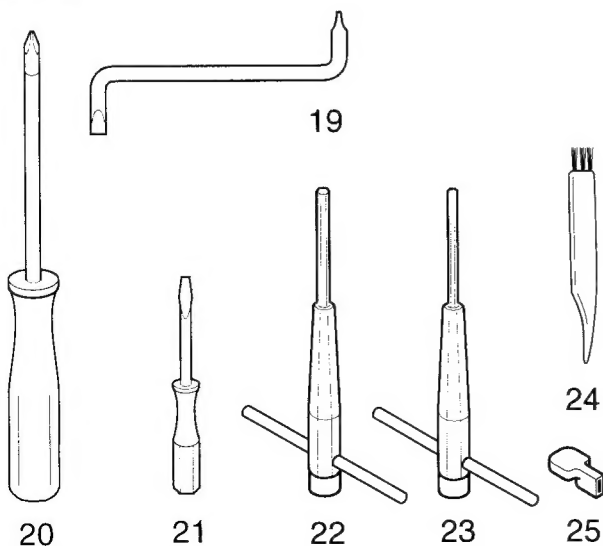
●Accessories

Please confirm you have received the following.



1. Thread guide bracket
2. Thread guide pillar (2 pcs)
3. Thread stand
4. Thread stand felt (13 pcs)
5. Thread stand pin (13 pcs)
6. Wave washer (13 pcs)
7. Carriage
8. Frame base
9. Embroidery frame (square) PAT-32320
10. Embroidery frame (Round) PAT-180-360
11. Needle (DB X K5) (10 pcs)
12. Oiler
13. Sewing machine oil
14. CD-ROM
15. Instruction book (Machine, Happy Link)
16. Serial cable
17. Power line cord ass'y (A shape will be changed depending on a destination)
18. Fuse (6A)
19. Off set screw driver
20. #2 (+) Screw driver
21. 2 mm (-) Screw driver
22. 3 mm hexagonal driver
23. 2.5 mm hexagonal driver
24. Brush
25. Manual lever

Tools

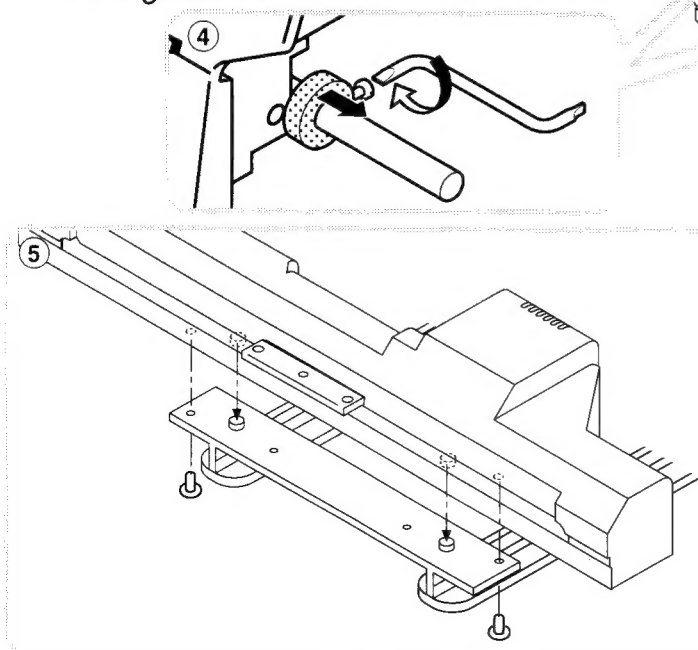
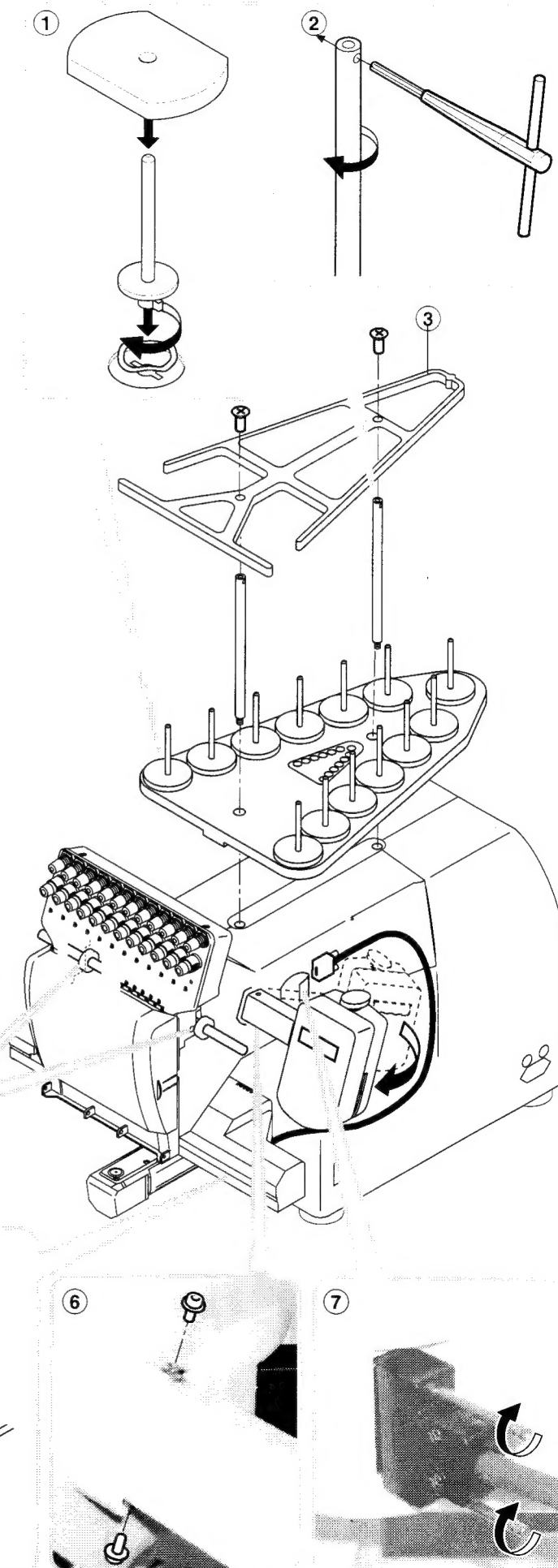


SETTING UP THE MACHINE

2-3

● Assemble machine unit

1. Insert the thread stand pin with wave washer on the thread stand by turning clockwise, Then insert thread stand felt.
 2. Put the thread stand on to the machine and insert the thread guide pillar. Turn the thread guide pillar clockwise with a 3 mm hexagonal driver until tight.
 3. Install the thread guide bracket with supplied screws (pan head screw M6 X 10 2 pcs).
 4. Loosen the screw with a offset driver and remove the red shipping collars that are equipped on the both side of the guide bar. (Keep the shipping collars. It is necessary when packing.)
 5. Put the carriage and carriage arm together with screw (M4 X 8 2 pcs). 2 pins in the upper carriage arm will fit into holes on the lower carriage.
 6. Raise slowly the control box to the front then fix it with 2 supplied screws (M4 X 8 2 pcs).
 7. Connect the cable of carriage to the machine with fixed screw.
 8. Install the arm for tubular embroidery. Please refer to (page 6-1) "Installing and removing the frame base".
Or, Install the cap frame for the cap embroidery. Please refer to (page 7-1) "Installing and removing the cap drive frame".
- When taking the machine apart in case of packing, the process is opposite of assembling the machine. Please do exactly the opposite way of assembling.
 - When packing the machine up for transportation, be sure to select the sixth needle and fix it with shipping collars on the both side of the guide bar.



SETTING UP THE MACHINE

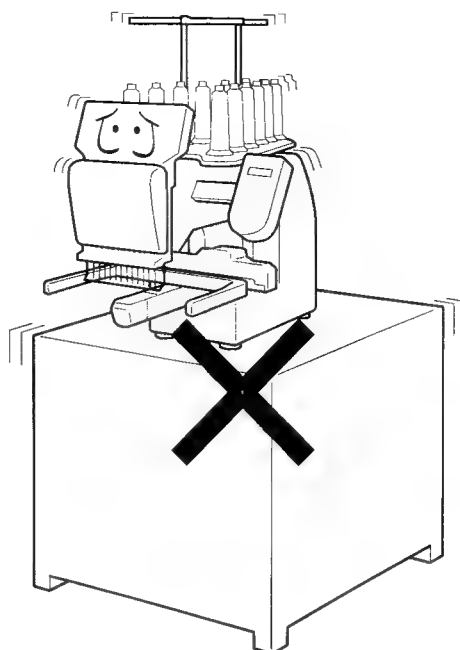
2-4

● Machine installation

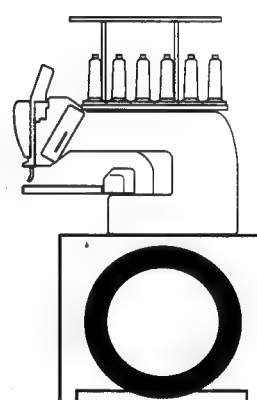
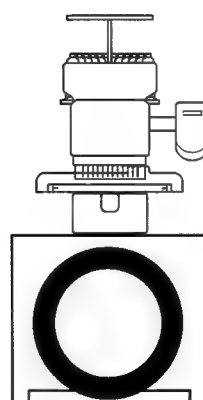
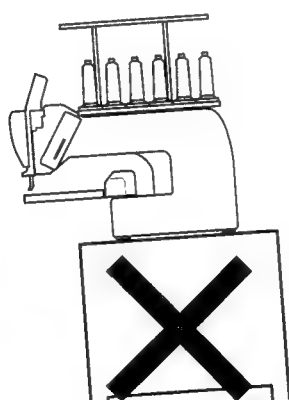
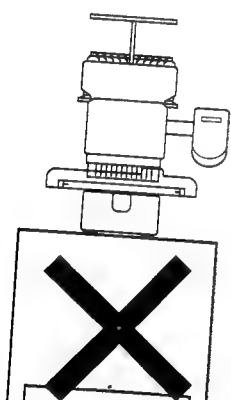
1. Please use a stout table to set the machine on.

Please check for any shaking or excessive vibrating of the machine table when the machine is running.

If you have a problem, Please use a stronger table for the machine.

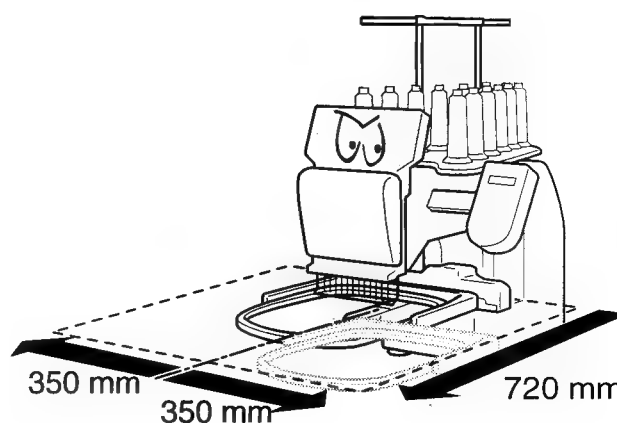


2. Please sit the machine level on the table.



3. Please be sure you have this much room around your machine for it to move.

It is possible for the embroidery frame to hit you and cause injury.

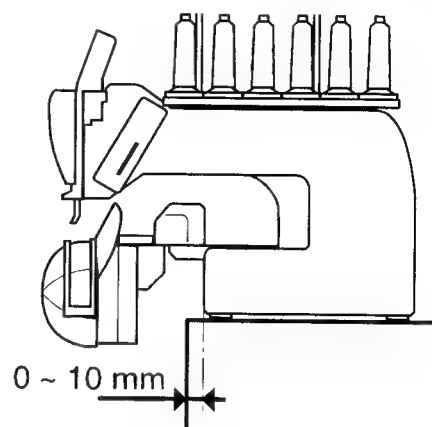


SETTING UP THE MACHINE

2-5

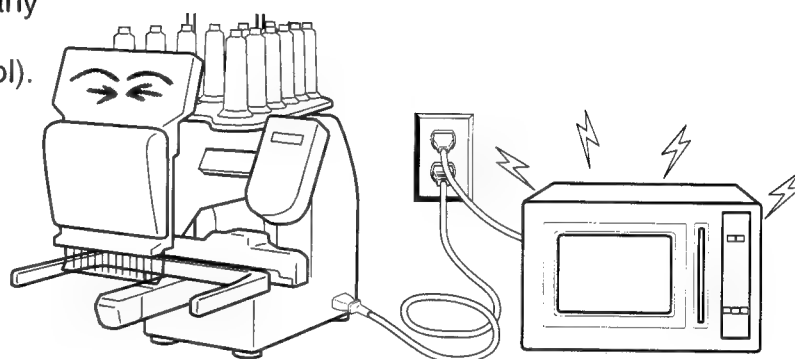
4. Please be sure you have this much room around your cap drive for it to move.

Please machine on the table positioning like right side drawing.



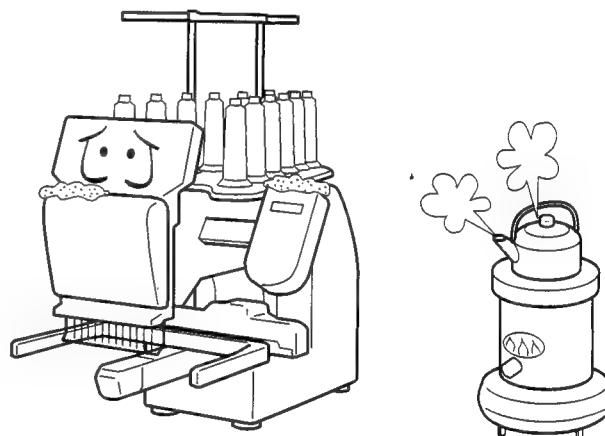
5. Please do not sit the machine near any kind of other electric equipment (Examples: Microwave or electric tool).

Has possible to wrong movement of the machine.



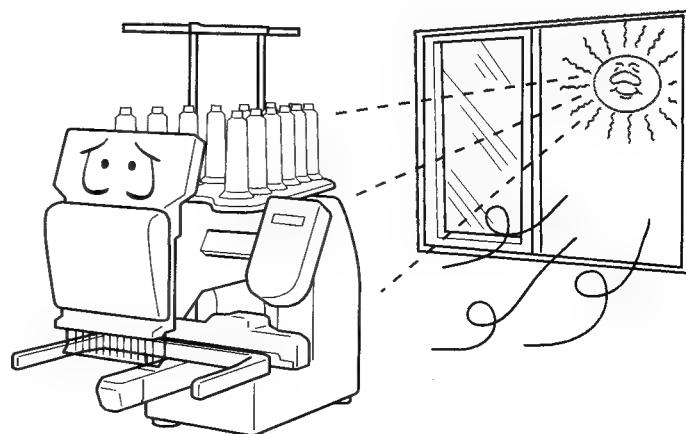
6. Please keep away from dusty and high moisture environments.

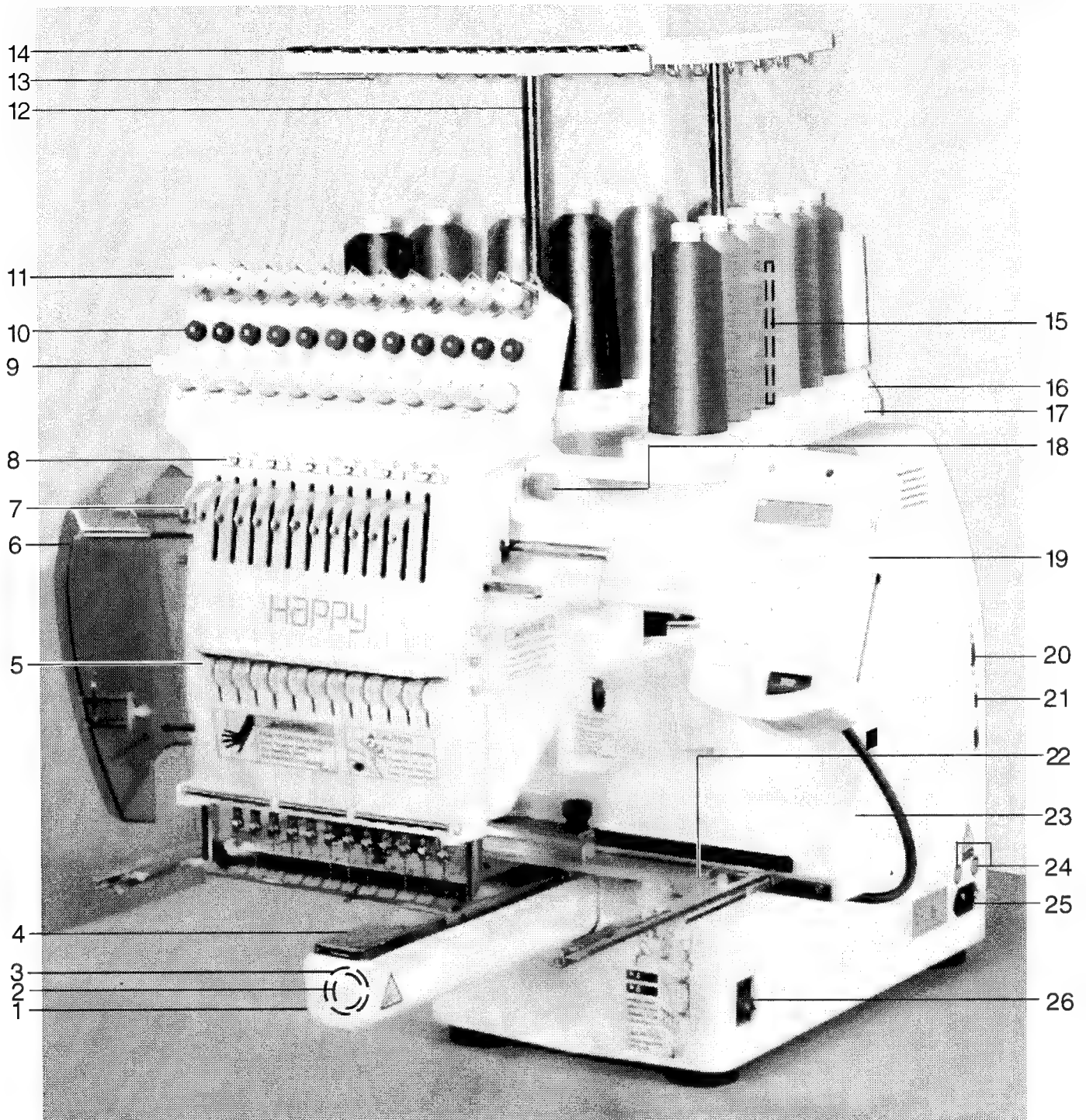
Has case of rusting or damaging.



7. Please do not sit the machine in direct sunshine or windy locations.

Has case of rusting or damaging.





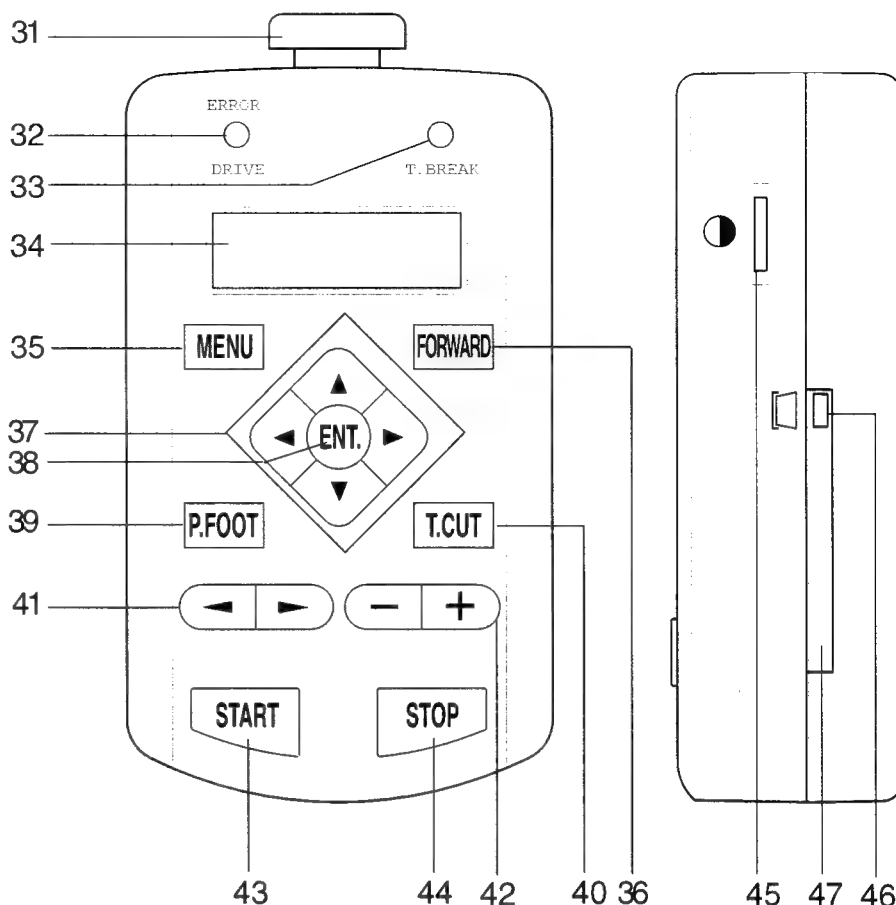
1. Hook cover
2. Hook
3. Bobbin case
4. Needle plate
5. Thread check spring
6. Take-up lever cover
7. Take-up lever
8. Lower rectifier
9. Thread tension
10. Detecting roller

11. Minor thread tension
12. Thread guide support
13. Thread guide
14. Upper rectifier
15. Thread stand pin
16. Thread stand felt
17. Thread stand
18. Needle bar selection knob
19. Control box
20. Serial port

21. USB port (based on the USB)
22. Frame base
23. Carriage
24. Fuse (6A)
25. Terminal box
26. Power switch

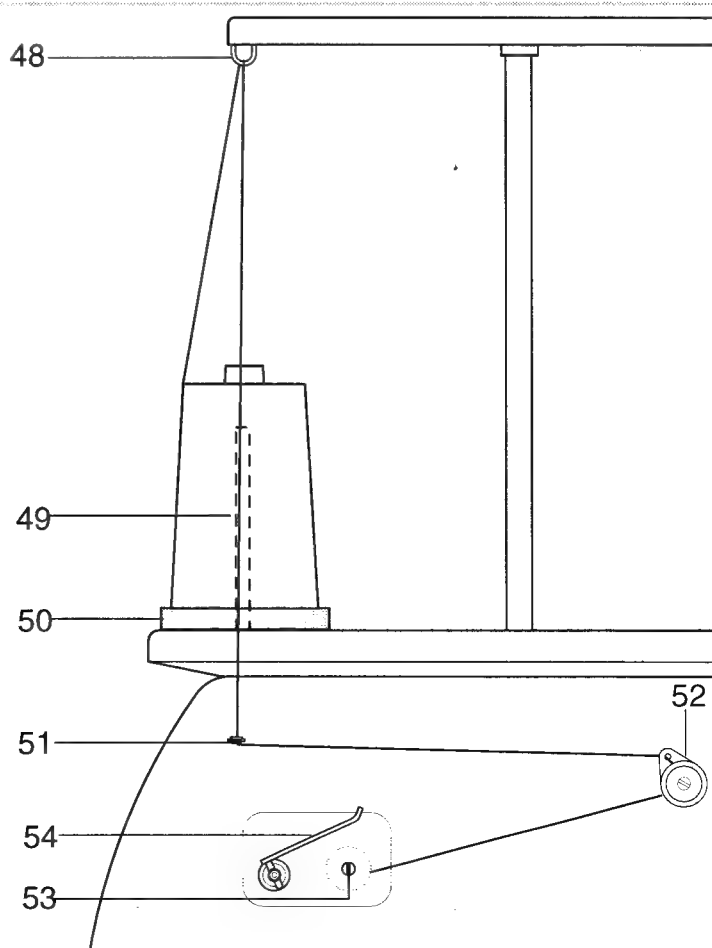
CONTROL BOX

- 31. Emergency stop button
- 32. Drive lamp
- 33. Thread break lamp
- 34. Display (L.C.D.)
- 35. Menu button
- 36. Forward button
- 37. Arrow button (Up, Down, Left, Right)
- 38. Enter button
- 39. Pressure foot button
- 40. Thread cut button
- 41. Needle change button
- 42. Speed control button
- 43. Start button
- 44. Stop button
- 45. Contrast control dial
- 46. Memory card eject button
- 47. Memory card slot



BOBBIN WINDING

- 48. Upper Thread guide
- 49. Thread stand pin
- 50. Thread stand felt
- 51. Thread guide
- 52. Thread tension
- 53. Spindle
- 54. Lever



This manual consists of the following instruction.

We will display the items on the left with graphics on the right to clearly show the steps necessary to perform any function.

Graphics at the far right will show the display after performing the requested steps.



CAUTION: To prevent accidents.

This will appear for items related to your safety.



CAUTION: To avoid problems.

This will appear for items related to potential problems.

Order of operation

1. When the machine is stopped, Press "MENU" button until display shows [MENU].
2. Select the design name you wish to sew, by use of the up and down arrow buttons.
3. When you press the "ENTER" button, the machine will return to drive mode.

If you wish to cancel of your selection, Press the down arrow button then press ENT. (Drive lamp will change to green) p 3-4

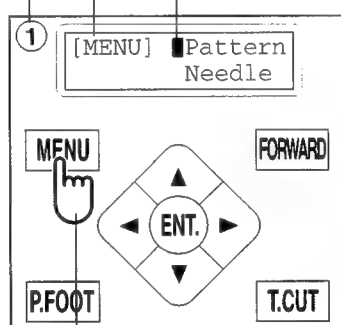
This indicates supplementary explanation on operation or action of the machine against operation.

This indicates an additional explanation on an operation. Sample page No. for more detail.

Order of operation

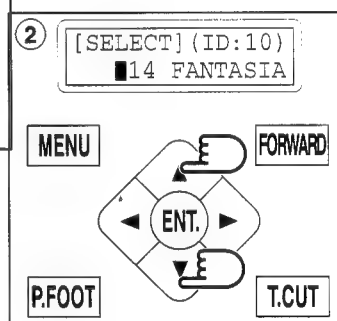
Indicate menu item

Cursor : Presently selected item

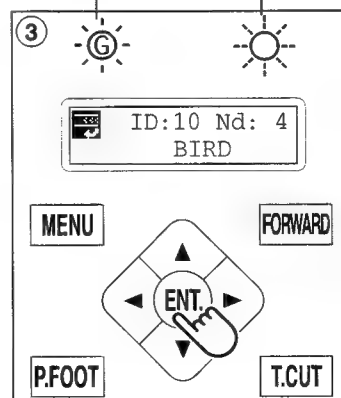


Showing the button to be pressed

"G" indicating the lamp is glowing Green to show the machine is ready to sew.
"R" indicating the lamp is glowing Red to show an error has occurred.



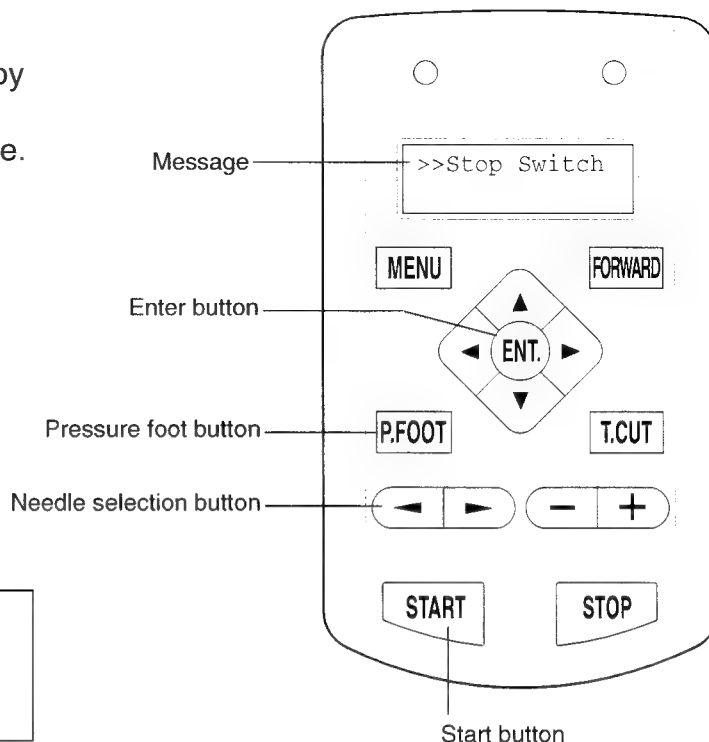
This lamp will blink to show a thread break.





MESSAGE

3-4

If the machine shows an message when turn on the power, or when you stop the machine by pressing the "STOP" button.
Please proceed as shown in the following table.



CAUTION: To prevent accidents.
The embroidery frame may move. Please remove your hand for your safety.

MESSAGE	EXPLANATION	OPERATION	PAGE
 A B	Designated letter on the display is due to be lubricated.	Lubricate the location indicated by A or B. Refer to the indicated page in this manual then press the "ENTER" button.	10-1
	Clean the rotary hook and the thread cutting knife.	Clean with instruction in the reference page then press the "ENTER" button.	10-2
Caution !! Frame moves	Frame will move to recognize the actual frame position.	When you press the "ENTER" button, the embroidery frame will move and return to the previous position.	3-5
>>Stop Switch	The machine is stopped because the stop button was pressed while embroidering the design.	Press the "START" button to resume embroidery.	
>>End	The machine is stopped because it has finished the design.	If you wish to sew next design, Please replace embroidery frame.	
>>Change Stop	Machine stopped, because you used "Stop at color change point" function.	When you press the "START" button, the machine will select the next color and resume embroidering automatically.	
>>Color ?	Machine stopped, because you did not select next color No.	Please select next needle number by "Needle selection" button then press the "START".	
>>Thread Break	Machine stopped, because upper or bobbin thread broken.	Please thread upper thread or check bobbin thread then press "START" button to resume embroidery.	
>>Trace end	The machine is stopped because it has finished with the design trace.	Press the "START" button if OK.	6-4 7-6
>>Pressure foot	Pressure foot is down.	Press "P.FOOT" button to lift up the pressure foot. Then press "START" button.	

LET'S TURN ON THE MACHINE

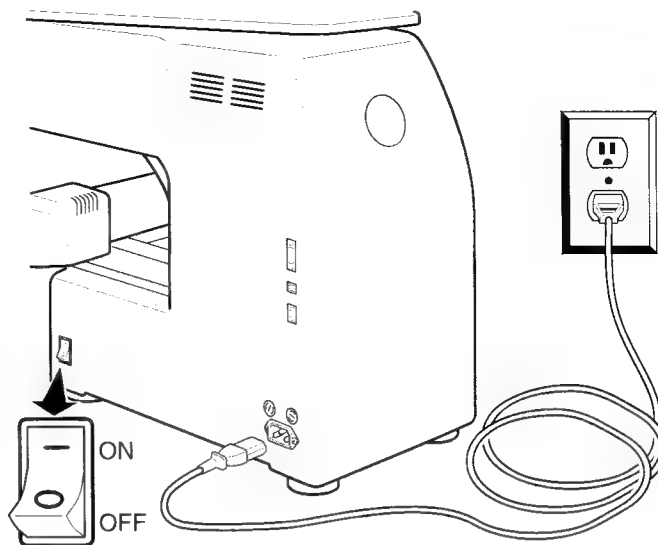
3-5

●How to turn on the machine



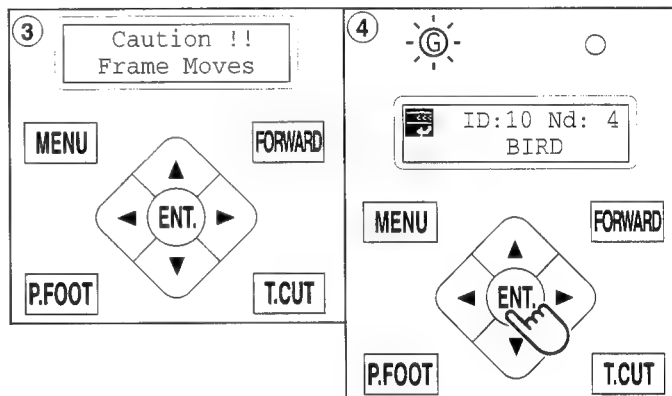
CAUTION: To prevent accidents.
The embroidery frame and carriage will move.
Please remove your hand for your safety.

1. Please connect power line cord to inlet on right side of the machine.
2. Connect the power line plug to the electric outlet.
3. Turn on the power switch.



Push the power switch firmly so it will remain on.

4. Press the "ENT." button.
The embroidery frame will return to the previous position automatically.



To disconnect, switch the power switch to the off position, then remove plug from outlet.



DANGER: To reduce the risk of electric shock.

Never leave the machine unattended when plugged in.

Always unplug this machine from the electric outlet immediately after using and before maintenance.

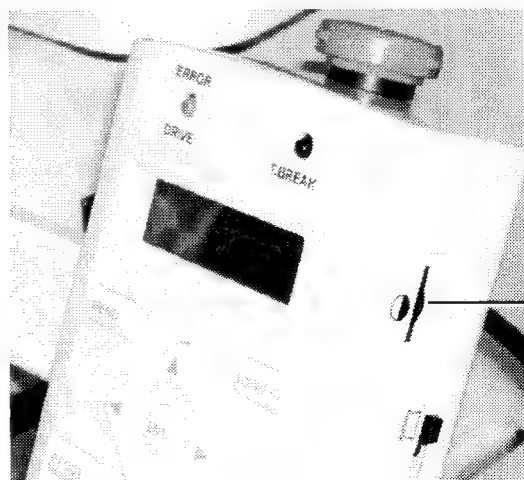


WARNING: To reduce the risk of burns, fire, electric shock, or injury to persons.

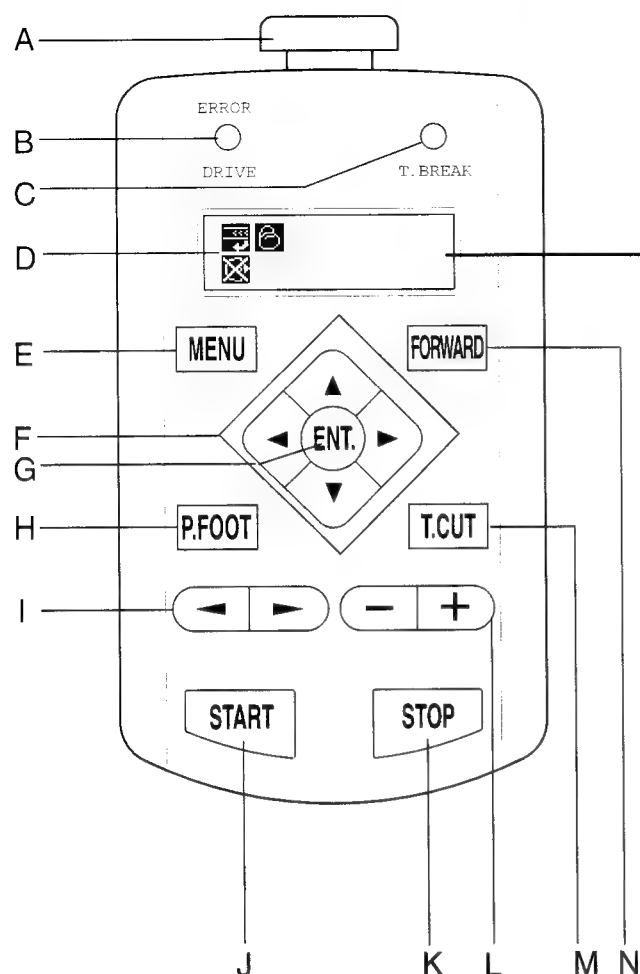
Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.

●If the display is not clear

Please adjust the contrast of the LCD display by turning the small dial on the right side of the control box.

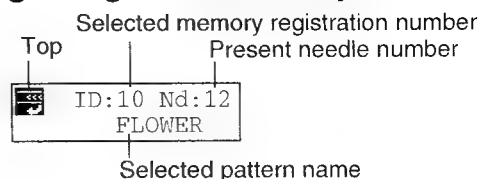


Contrast control dial

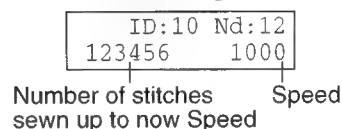


Display example

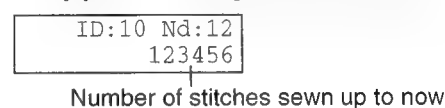
When beginning an embroidery



While embroidering



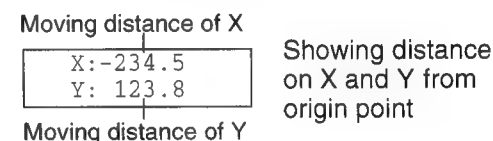
Machine stopped during embroidering



Display if the machine has no design in memory



Display when manually moving the hoop



A. Emergency stop button

When you press this button, the power is switched off and the machine stops. The Emergency button will be locked, whenever it is pushed. To unlock, turn the emergency button to the right (Arrow direction) then release and the button will unlock. Please use this button only for emergency.



B. Drive lamp

Green You can start embroidery.
Red You have a machine error. an error number will be shown on the LCD screen. □ 10-3

C. Thread break lamp

Blinking red lamp ... Indicates the upper thread has broken or the Bobbin thread has run out.

D. Display

Shows the embroidery design name, the number of the current needle and other machine generated messages.



Top

This icon when displayed indicates that the machine is ready to start sewing from the top of the design.



Normal cap frame

Shows cap drive frame is set and normal cap frame is available.



Wide cap frame

Shows cap drive frame is set and wide cap frame is available.



Do Not Remove the memory card

Please do not remove memory card when this icon is displayed.

If you remove the memory card when this icon is displayed, it is possible to corrupt the design data in the machine memory and on the memory card.

E. Menu button

Displays the function menu for the machine settings and the design set-up.

F. Arrow button (Up, Down, Left, Right)

The frame moves toward direction of the arrow mark on the pressed button.

G. Enter button

If you depress this button while also pressing an arrow button, the frame will move more quickly.

H. Pressure foot button

You can raise or lower the presser foot.

I. Needle change button

Move the sewing head in the direction of the arrows.

J. Start button

Starts the machine.

If you press this button while the machine is running, the machine will switch to "inching".
(Super slow speed)

The Machine will return to the previous speed when you remove your finger from this button.
If you use the inching function for an extended length of time it is possible to influence the stitch quality.

If you press start button when the take up lever cover is open, an error message will be shown.
You cannot start embroidery when take up lever cover is open.

P 10-4

K. Stop button

The machine stops when pressed.

Pressing the "STOP" button after the machine has stopped will cause the following to occur.

Press one time The frame move back one stitch.

Keep pressing The frame will move backwards continuously.

Keep pushing longer ... Function of button is locked. The frame goes back by 1 stitch at a time continuously. Push the stop button again to stop it.

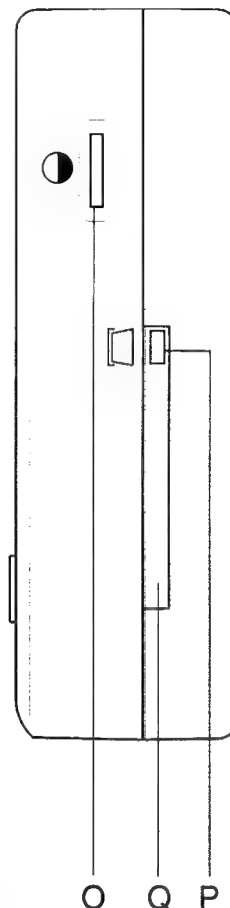
Keep pressing still longer ... Function of button is locked. The frame goes back by 10 stitches at a time continuously. Push the stop button again to stop it.

L. Speed control button

Press the + button to increase the machine sewing speed and the - button to lower the machine speed. The sewing speed is shown on the display.

M. Thread trim button

The Machine will cut the upper and lower thread when this button is pressed.



N. Forward button

Press one time The frame moves forward one stitch.

Keep pressing The frame will move forward continuously.

Keep pressing longer .. Function of button is locked. The frame will move forward by 1 stitch continuously. Push the "STOP" button to stop it. When you stop it, push stop button.

Keep pressing still longer ... Function of button is locked. The frame will move forward by 10 stitches continuously. Push the "STOP" button to stop it. When you stop it, push stop button.

O. Contrast control dial

Adjust the contrast of the display by turning the contrast control dial.

P. Memory card eject button

Press this button to take out the memory card. Please do not remove the memory card when the

 icon is displayed on the LCD display.

Q. Memory card insertion slot

PCMCIA card socket for installing the memory cards.



CAUTION: To prevent accidents.

If you press the thread trim button, the needle will penetrate the fabric. Please keep your hands clear for your safety.

CONTROL MENU

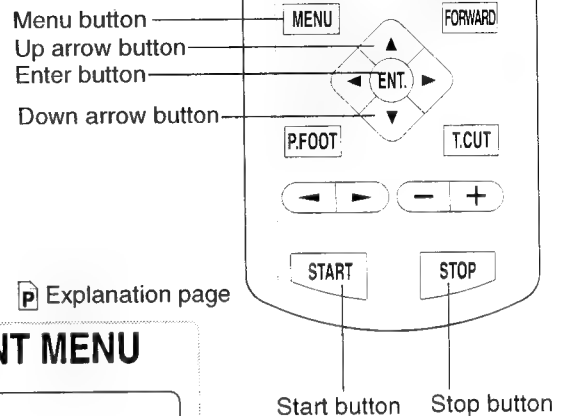
3-9

This page shows the relationships for all machine functions. (Drive mode and Function menu)

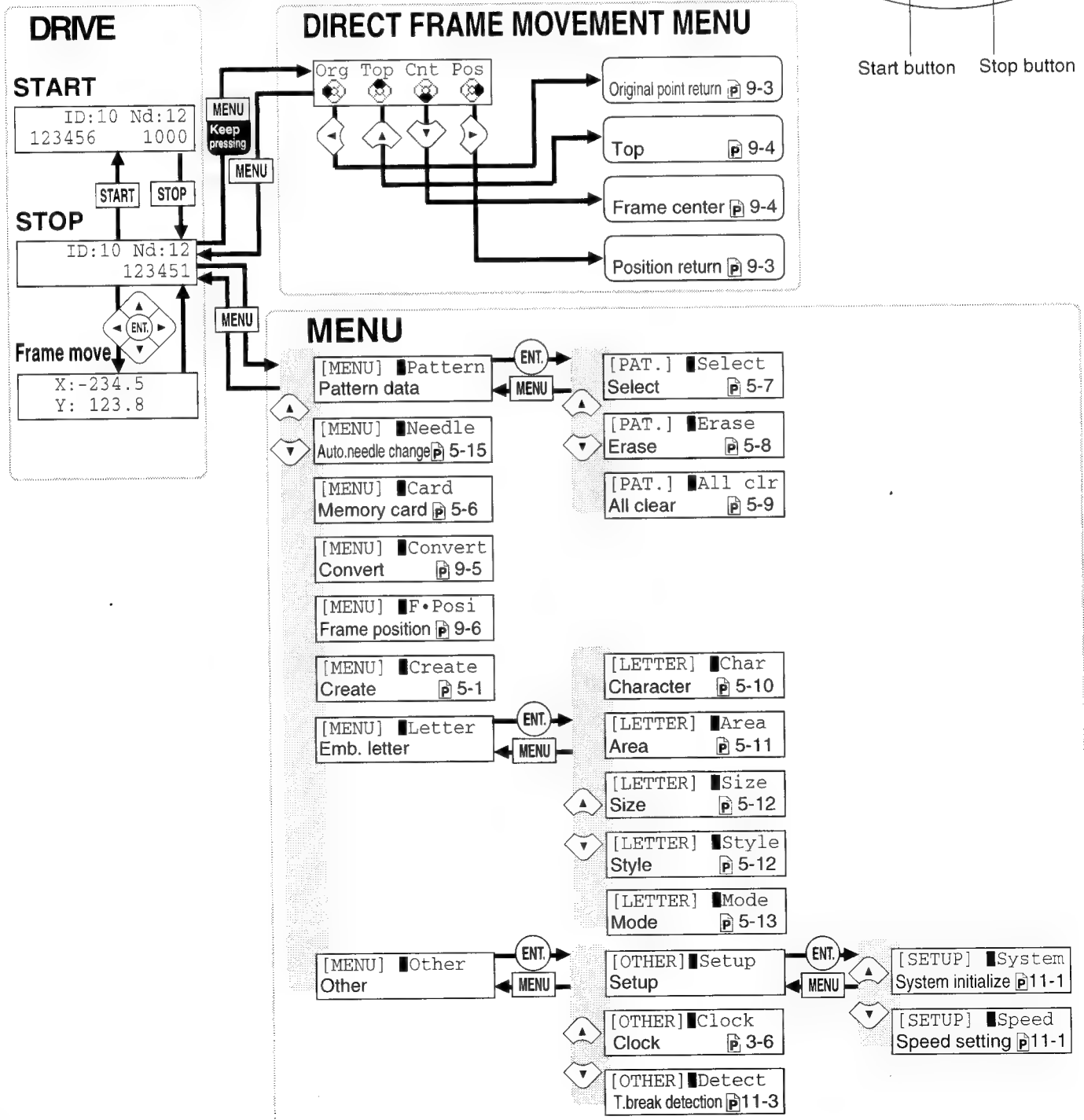
You can start embroidery and manually move the frame only in Drive mode.

If you keep pressing a "MENU" button longer than 1 second, the direct frame movement menu will come up. Use the "MENU" button to switch between Drive mode and Menu mode. If you press the "MENU" button from Drive mode, you will be switched to Menu mode. Then you can select any function by the up and down arrow keys. Pressing the "ENT" key enters your choice.

If you press the "MENU" button from any point in the Menu mode, you will change to Drive mode.



Explanation page



INSERTING A NEEDLE

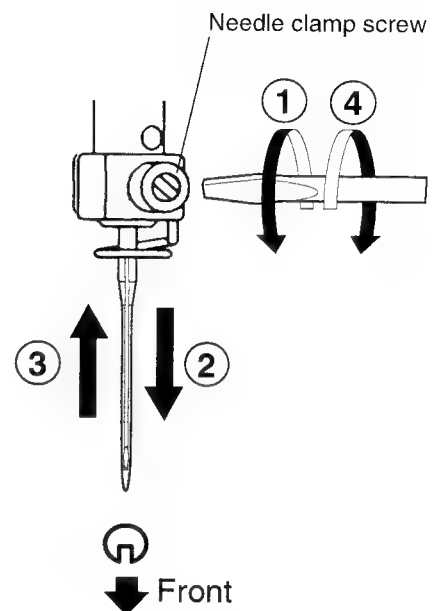
4-1

Select a needle of the right type. See the following "SELECT THREADS".

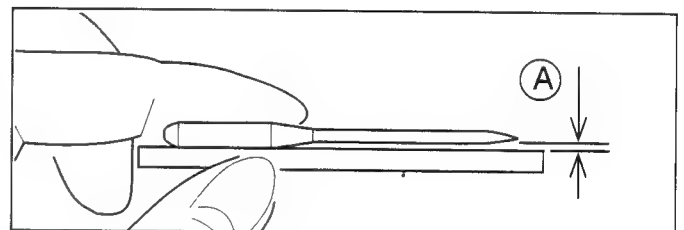


CAUTION: To prevent accidents.
Turn off the power before removing the needle.

1. Loosen the needle clamp screw slightly with the screwdriver.
2. Remove the needle.
3. Insert a new needle into the needle clamp with push it up as far as it will go keeping the slotted side of the needle in front.
4. Tighten the needle clamp screw with the screwdriver.



- A. Do not use a bent or blunt needle.
Place the needle on a flat surface and check for straightness.



SELECT NEEDLES AND THREADS

4-2

About needle

Please select needles by type of material .

Normally, We supply a DB X K5 needle as in the machine accessory kit.

TYPE	APPLICATION	Needle Size
DB X K5	For normal embroidery	9 ~ 18
DB - K23	For knit	9 ~ 12

Relation of needle and upper thread

Please select type of needle and upper thread by flowing list.

Size		Relation of needle and upper thread			
Organ	German	Cotton #	Silk	Polyester	Rayon
# 8	# 60	100 ~ 130	140 ~ 160	150 ~ 200	50 ~ 70
9	65	70 ~ 80	100 ~ 120	130 ~ 150	70 ~ 100
10	70				
11	75	50 ~ 60	80 ~ 100	100 ~ 130	100 ~ 130
12	80				
13	85	36 ~ 40	60 ~ 70	80 ~ 100	130 ~ 150
14	90				
15	95				
16	100	30 ~ 36	50 ~ 60	60 ~ 80	150 ~ 160
17	105				
18	110	24 ~ 30	40 ~ 50	50 ~ 60	180 ~ 230

Normal embroidery field

► Normal use embroidery needle and upper thread.

Upper thread : Rayon 120 d/2 (120 denier)
Polyester 120 d/2 (120 denier)

Needle : #11 (DB X K5)

► If the relationship of needle size and thread type is incorrect, it is possible to have any of the following problems.

- Thread break
- Skip stitch (Upper thread does not catch bobbin thread)
- Other stitch quality problem

Backing

Generally, Backing is used for hooped embroidery fabric. Knit fabrics particularly require the use of embroidery backings.

Embroidery backings will allow the hoop to move the fabric more accurately, creating a more beautiful embroidery.

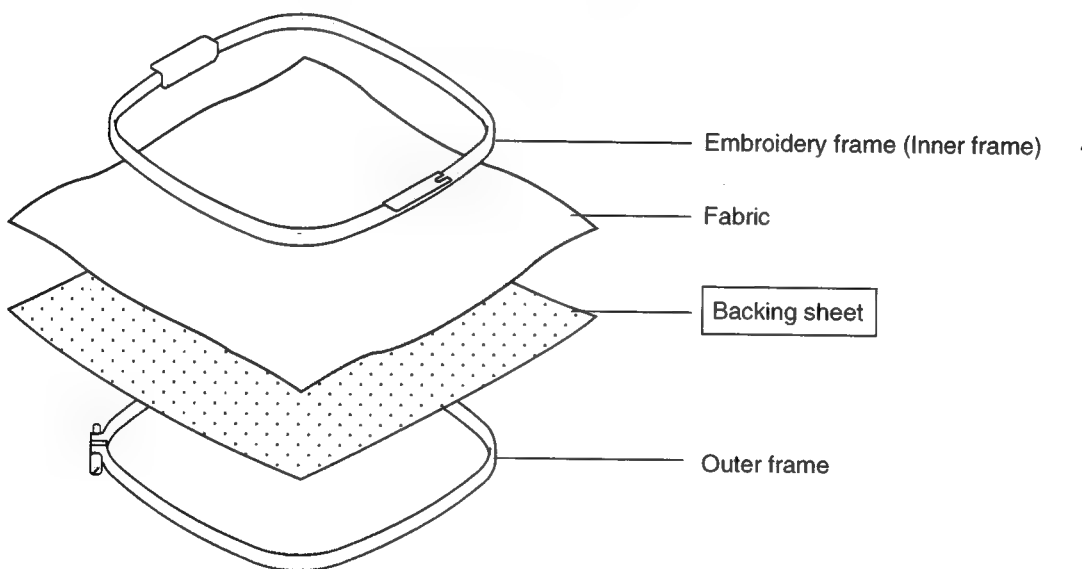
Select backing type

Choose the thickness and number of sheets by the type of material and embroidery condition. Generally, you should consider the following items.

- Embroidery stitch quality
- Contraction or compression of fabric caused by sewing, etc.
- Stiffness of fabric

■ In case, if you sew lace and leather, you may not need backing sheet.

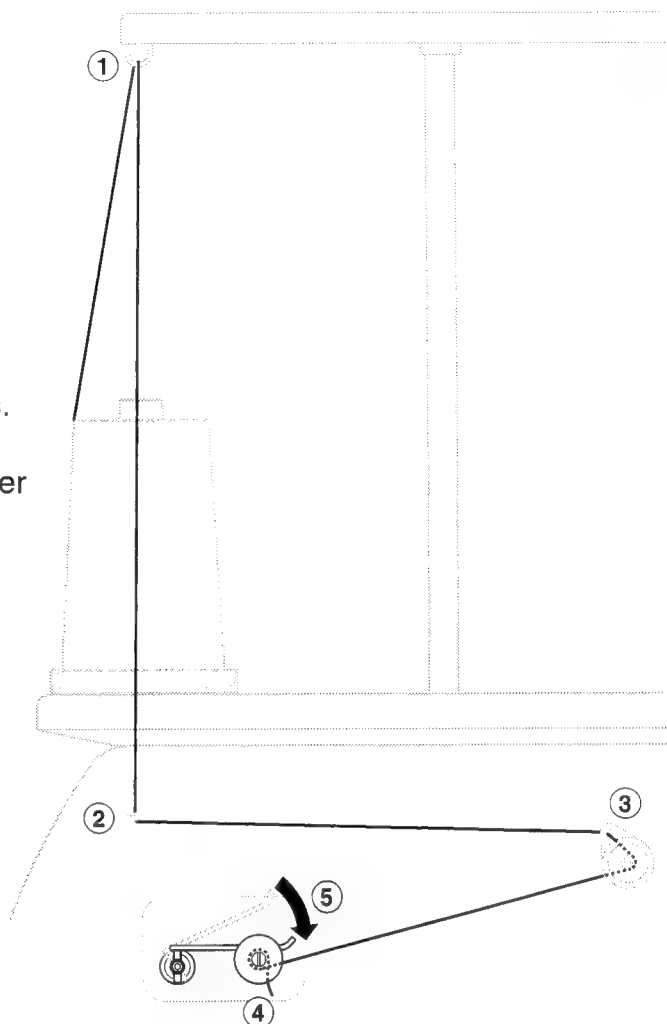
Example of using a backing



●Winding the bobbin

Please thread as shown.

1. Upper Thread guide
2. Thread guide
3. Thread tension – Be sure to thread thorough the small eye before going between the disks.
4. Bobbin (Place the bobbin on the bobbin winder spindle.)
5. Press down the limit lever to start the winder. The limit lever will return automatically after winding is complete.



Tension

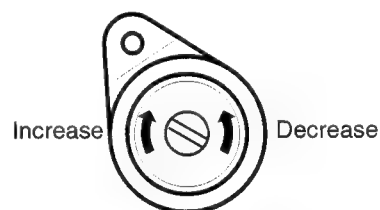
Adjustments of bobbin thread winder tension.

- Please balance the thread on the bobbin as shown.

Please confirm the bobbin is wound properly.

- Please keep the tension constant while winding.

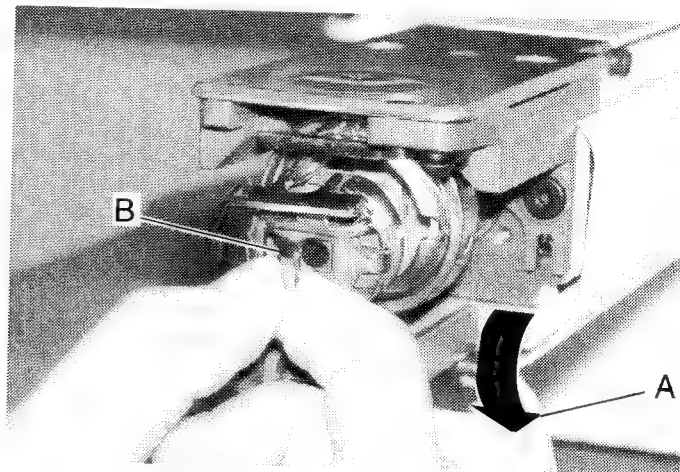
Please adjust thread tension stronger if thread winds too loose.



⚠ CAUTION: To prevent accidents. Please watch out for the point of the rotary hook when you replace the bobbin.

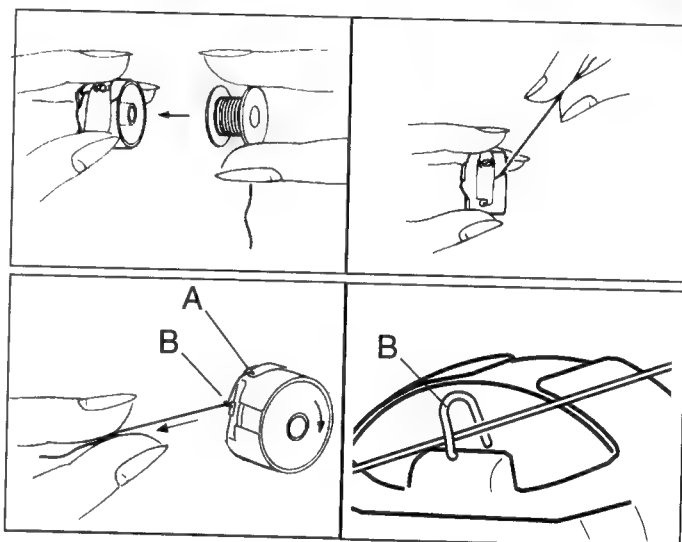
● Removing the bobbin

1. Open hook cover (A) to front.
2. Grasp bobbin case latch (B) and withdraw bobbin case from hook taking care not to damage the thread keeper.



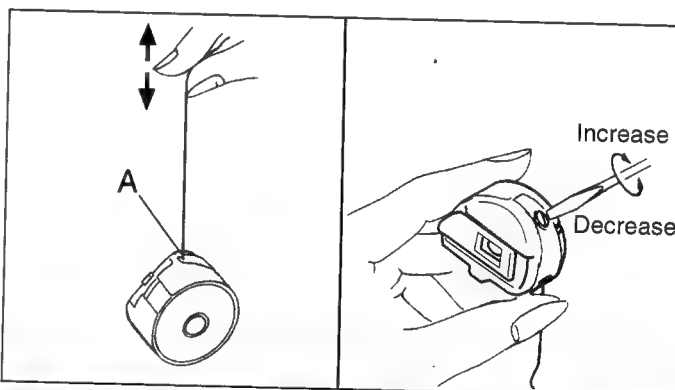
● Inserting the bobbin

1. Hold the bobbin case in left hand. Hold the bobbin in your right hand with thread on top leading from left to right.
2. Insert bobbin in case and draw thread up into slot in case.
3. Draw thread under tension spring (A) and wind into guide coil (B). The Bobbin should turn clockwise in the case when the extending thread is pulled. When threading to guide coil (B).



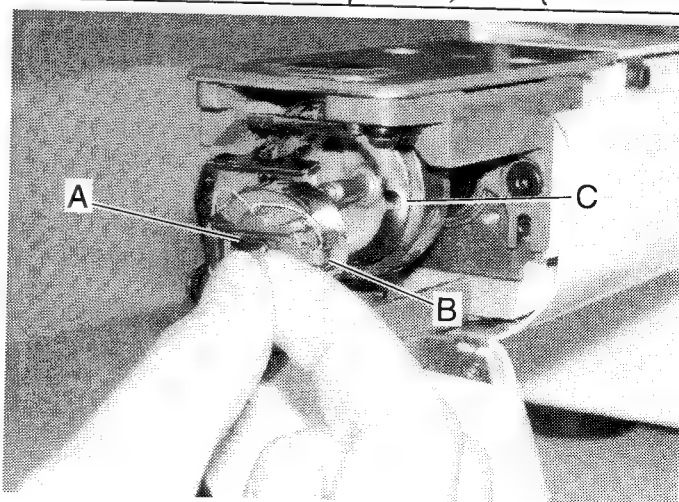
● Adjusting bobbin thread tension

1. Hold bobbin thread and jerk hand upward 1 inch or so. The thread should come out about an inch or so.
2. The small screw on the tension spring is for adjusting bobbin tension. This adjustment is very delicate. Please turn the screw only a small amount. Only 1/8 of a turn maximum.



● Inserting the bobbin case

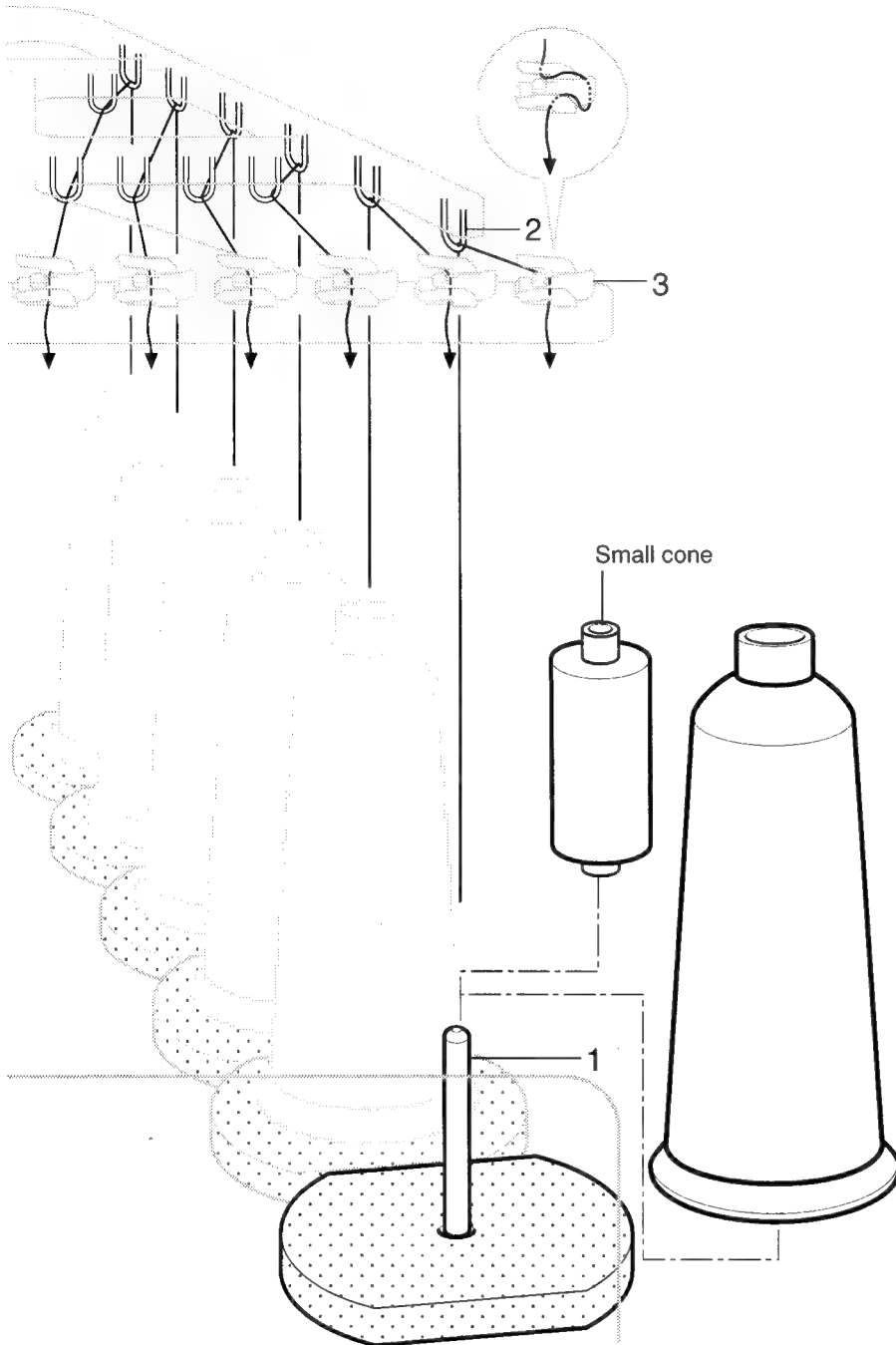
1. After threading bobbin in case, open bobbin case latch (A), grasping it in fingers as shown. Slip bobbin and case on stud of rotary hook body, and press in securely. Release bobbin case latch. Press the bobbin case in to be sure it is fully seated.
2. Close hook cover.



■ The attached bobbin case is available only on this machine. Thread might be caught in the thread guide coil if you use others.

● How to thread upper thread

Pass upper threads in order according to the Fig.



1. Thread stand

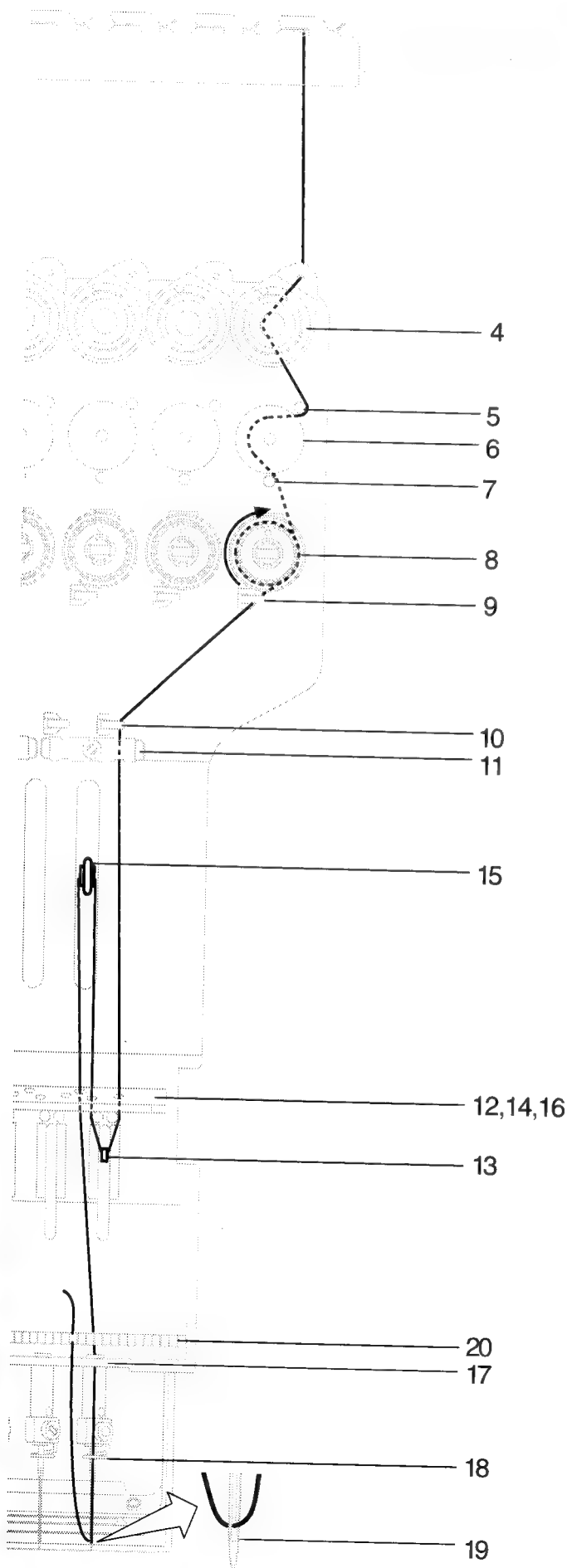
Set thread cone on the stand.
Small cone can be used as showing.

2. Thread guide

Thread through the thread guide above each thread cone.

3. Upper rectifier

To next page



4. Minor thread tension

5. Guide pin upper

6. Detecting roller

7. Guide pin lower

8. Thread tension

Wind upper threads one time around rotary tension disc clock-wise.

9. Upper thread guide

10. Lower thread guide

11. Lower rectifier

12. Thread guide plate upper

13. Thread adjusting spring

14. Thread guide plate upper

15. Take-up lever

16. Thread guide plate upper

12,14,16 17. Thread guide plate lower

13 18. Needle bar thread guide

19. Needle

Thread from front side of needle.

Pull upper threads slowly and see that the detecting roller moves smoothly by pulling the thread downward as much as possible.

20. Thread holding spring

Push thread into spring.



CAUTION: To prevent accidents.

Please be careful of the sharp point of the needles when threading upper threads through the needle.

MACHINE SETTINGS

5-1

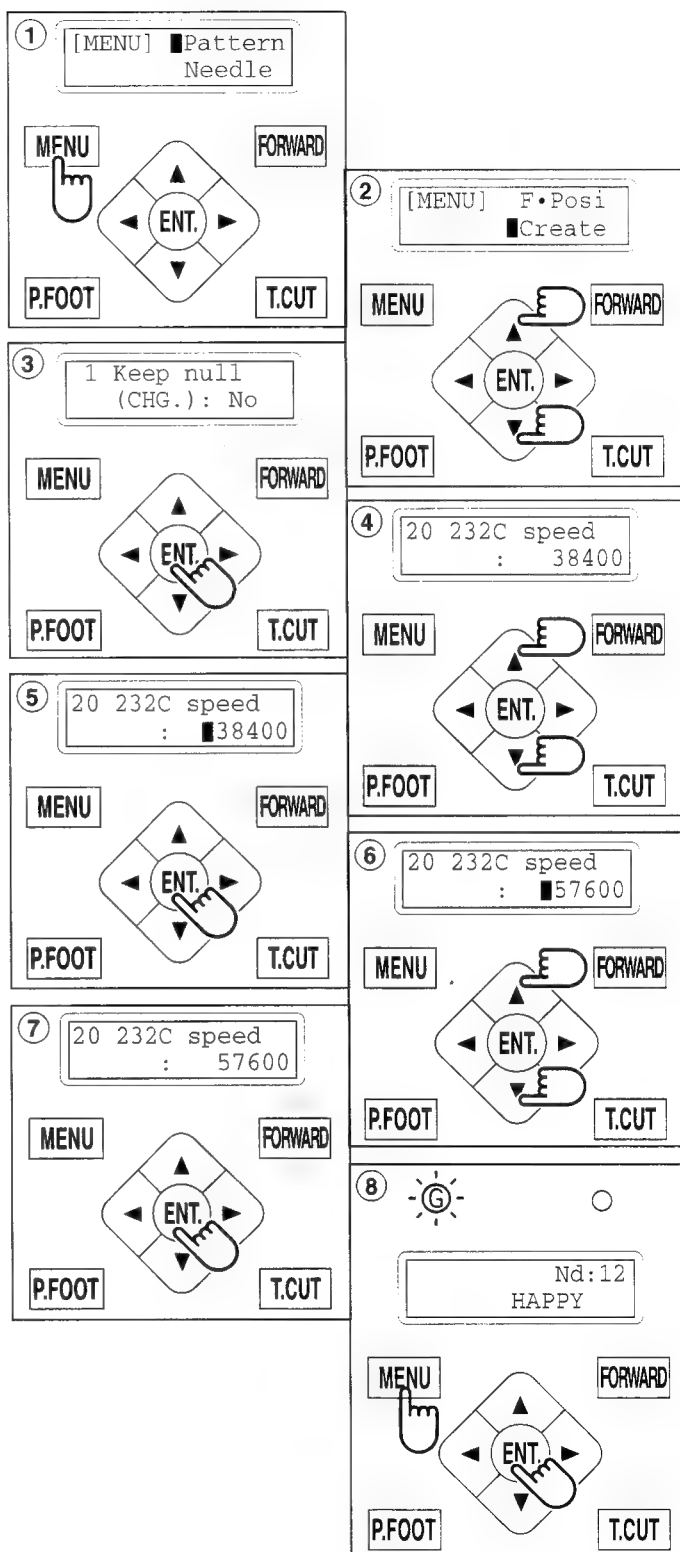
Before embroidering, set the basic settings of the machine.

Please set the No. 20 (232C speed) when you connect with the PC.

The rest of the setting should be defaults (indicated by underline) normally.

1. Press the "MENU" button until [MENU] is showing when the machine is stopped.
2. Select "Create" by using the up and down "Arrow" buttons.
3. Press "ENT." button. The indicator will display a machine setting.
4. Press up and down "Arrow" button until it comes to the setting you wish to change.
5. Press "ENT." button to display a cursor on the indicator.
Now you can change the setting.
6. Press up and down "Arrow" button to choose "YES", "NO" or other choice as available.
7. Press "ENT." button to retain this new setting.
If you desire to change other settings, please repeat the steps 4 through 7 above.
8. Finally, Press the "MENU" button until the green lamp is showing on the control box.

When the green lamp is glowing, you are in Drive mode and can begin sewing.



No.	Display	Setting <small>Default is underlined</small>	Contents
1	Keep null (CHG.)	Yes <u>No</u>	This function lets the machine read zero stitches as they are before color change <u>when reading pattern data.</u>
2	Skip null stitch	Yes <u>No</u>	This reads pattern data by ignoring all the zero stitches <u>when reading pattern data.</u>

MACHINE SETTINGS

5-2

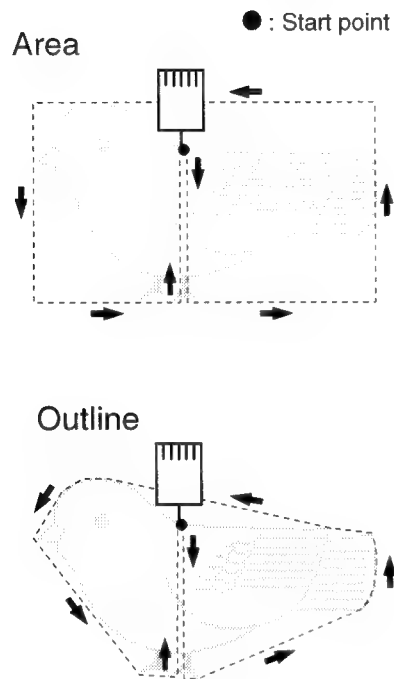
No. Display	Setting <small>Default is underlined</small>	Contents
3 Combine jump	Yes <u>No</u>	If there are repeating jump stitches when reading pattern data, this combines the continuous jump stitches up to maximum of 12.7 mm and reads.
4 TRD. break back	<u>Yes</u> No	When threads break, the drive frame goes back a few stitches and the machine stops.
5 Width data limit	1 - <u>13</u> mm (13=12.7)	When stitch length exceeds this length, the machine divides it by this jump length and creates multiple movements. Width data limit becomes 12.7mm only when setting value is set to 13. Please use a smaller number when you use thick and heavy material.
6 Cap frame	<u>Normal</u> Wide.....	When you use normal cap frame. When you use wide cap frame.
7 Convert cap	Yes <u>No</u>	When you install the cap drive frame on the machine, the machine will convert (rotate) your design automatically.
8 Quick start mode	Yes..... <u>No</u>	If you set to "No", the machine will increase speed slowly. Please select "No." when you have a problem with skipped stitches on the beginning stitch after thread trim. • The machine sews up to 3 stitches slowly after thread cut. • The machine sews up to 5 stitches slowly after thread cut.
9 Auto thread cut	<u>Yes</u> No	This performs automatic thread cut after color change and stop.
10 Cut at jump data	1 ~ 8(<u>3</u>)..... 0.....	When a set number of continuous jumps exists in pattern data, the machine cuts threads before jump. • Machine trims the thread on setting number of constant jump. • Does not trim.
11 Cut at null jump	Yes..... <u>No</u>	When there is one stitch of zero jump in the pattern data and more than one jump thereafter, this performs a thread cut before the zero jump. • Does trim on empty jump data. • Does not trim on empty jump data.
12 CHG. always cut	Yes..... <u>No</u>	Forces a trim at every color change. • Always thread trim before color change. • If data does not have trim function at color change point, machine does not trim.
13 Stitch sweeper	Yes <u>No</u>	This function eliminates extremely short stitches when reading pattern data. If you have a thread break problem at the same point all the time, it is possible your embroidery data has minute stitches in the data. If this is the case, please change to "Yes" and read your embroidery design again.
14 Sweep length	0 - 8 (<u>4</u>) (0 - 0.8mm)	This function deletes stitches when the stitch width is less than this length.
15 Full length cut	Yes..... <u>No</u>	The machine cuts upper threads to a longer length. If you have problems sewing after a trim, please change to "Yes". • Long • Standard
16 Long lock stitch	Yes..... <u>No</u>	Select long lock stitch. Please select "Yes" when you have thread trim problem. • Long • Standard
17 Data format	<u>Auto</u> Taj Hpy..... Brd..... Zsk.....	Select data format of embroidery data. If you have an error when "Auto", Please select other format. • Automatic recognition • Tajima, Happy • Barudan • Zsk
18 Trace type	<u>Q•Line</u> Area.....	Select the type of design trace. (Please refer to the more detailed explanation on the next page.) • Outline follows around the perimeter of the design • Area outlines the design with a square
19 STR. Lock stitch	<u>Yes</u> No	Put on lock stitch automatically.
20 Width data all	-1.0 ~ 1.0mm <u>0.0</u> mm.....	This is to alter the widths of all satin stitches for all the designs in the memory. • Adjust satin stitch width by selected amount. • Does not adjust width.
21 232C speed	19200 bps <u>38400</u> bps 57600 bps 115200 bps	Please select the Communication speed (baud rate) of the machine's serial port. Adjust the communication speed to the same speed as your PC. If the baud rate is set to a larger amount, the data of the design will be read faster. However, there is a greater potential for error at higher rates.

Detailed explanation of machine setting

#17 Trace type (Select type of design trace)

You can compare the design size and design position to the embroidery frame before you start sewing. The embroidery frame moves around the actual design size.

At this time you can choose which type of trace from 2 types of traces like the following figures.



●Connect with your PC

This embroidery machine will allow you to read design data from a connected PC.
A Serial cable or a USB cable can be used for the connection.

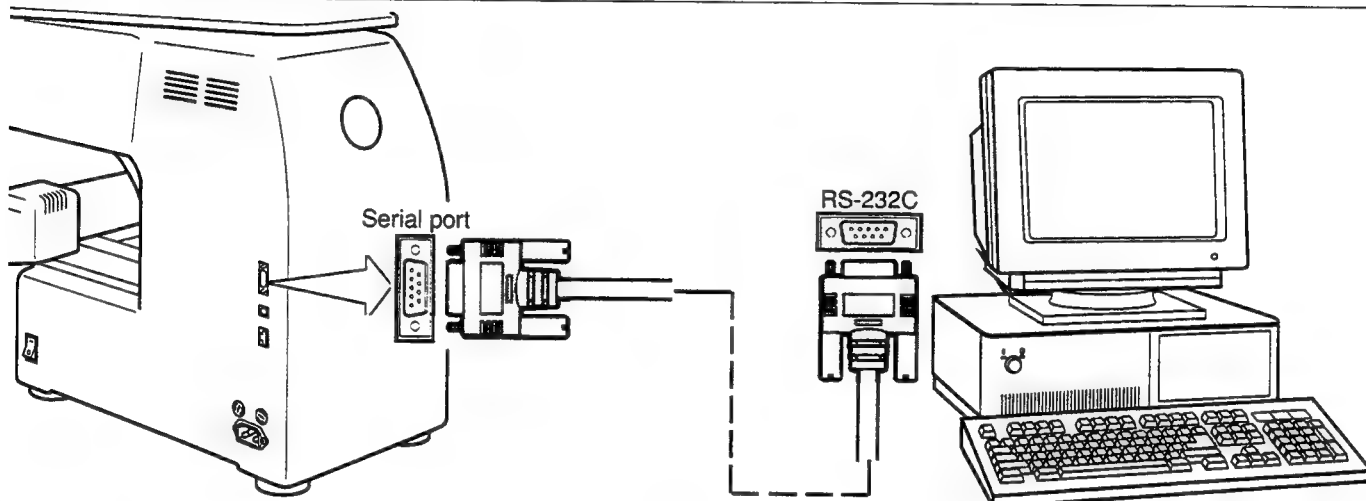
Serial connection

Connect the serial cable between the serial port (RS-232C) of the machine and the serial port of the PC.



CAUTION: To avoid problems.

Make sure that power source of machine and PC are off when connecting serial cable.



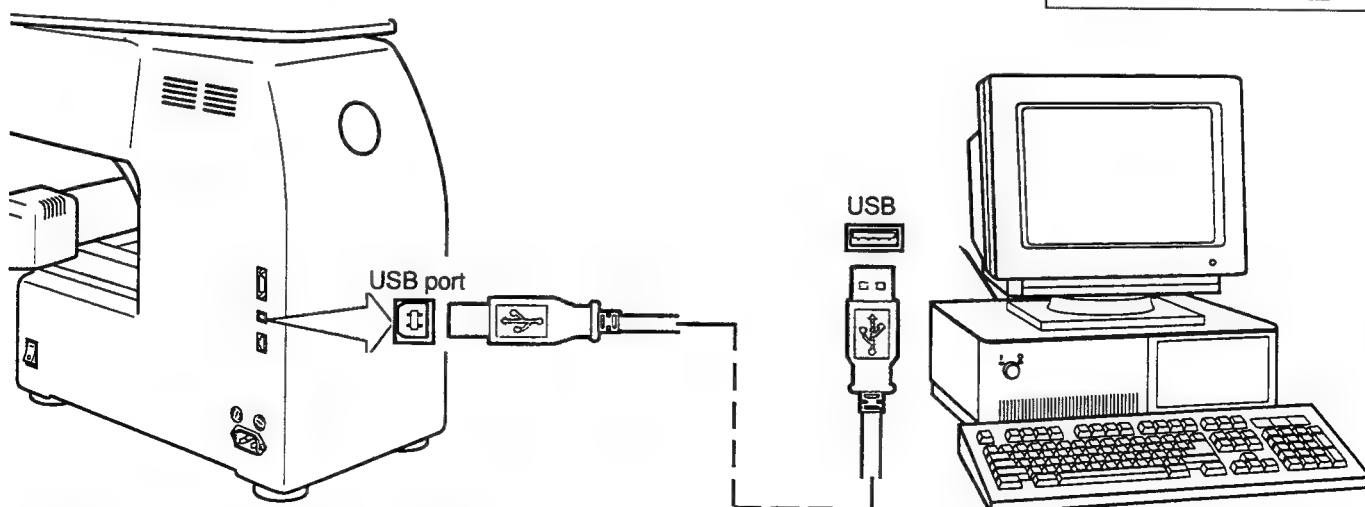
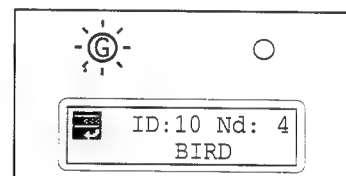
USB connection (USB 1.1, 2.0)

Connect by USB cable between USB port (based on the USB) of the machine and USB port of the PC.

When you connect by USB cable, make sure that power source of machine is on and set into drive mode (Lamp indicates green), and the PC is turned on also.

After recognizing USB in your PC, start-up the "Happy Link".

Please refer to instruction book of "Happy Link" for more precise information.



●Read embroidery pattern data from the PC

Designs can be transferred to the machine along with some functions by using the included software, "Happy Link".

Please refer to the "Happy Link" software manual for instructions.

● Read embroidery pattern data from memory card

Read the pattern to be embroidered from the memory card.

These types of Memory cards can be used. This machine is able to read different kinds of memory cards, which are generally used for digital cameras.

- Compact flash card
- Smart media card
- Memory stick
- SD card

■ Capacity of Memory card has to be over 16MB. This machine doesn't correspond if the capacity of Memory card is under 8MB.

■ If you initialize the Memory card with your PC, please proceed with FAT format form. This machine doesn't correspond if the Memory card is initialized with FAT32 format form. This machine doesn't correspond if the Memory card is initialized by electrical appliances (Ex. digital camera) exclude PC.

■ Please do not make folder in the Memory card when you transfer the design from your PC. The machine will not read design properly if it is in the folder.



Note for using Memory Card.

It is possible to use only memory cards (compact flash card, smart media card, memory stick, SD card) which are inserted into a PCMCIA card adaptor.

If you insert a LAN card or PCMCIA card other than noted above, it is possible the machine will break down.



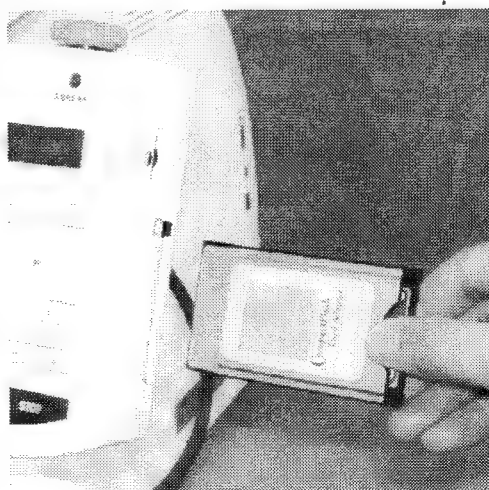
Handling note of Memory Cards and Card Adaptor.

Do not bend, drop, disassemble, charge or heat the memory card.

Keep away from humidity or direct sunlight.

To insert a memory card

1. Insert the memory card that contains the design data into its PCMCIA card adaptor. (You must provide the PCMCIA card adaptor for your particular memory card).
2. Insert the PCMCIA card adapter all the way into the Memory card slot of the machine (right side of controller). (The memory card should face toward you.)
The Eject button will come out.
3. Read embroidery design data according to following "Memory card reading" in the next section.



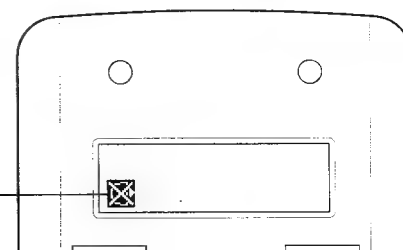
Eject Button



To remove a memory card

1. Please check that the "Do Not Remove" icon is not shown. Then push the eject button.
Pull memory card and adapter all the way out.
2. Please handle memory card carefully.

Do Not Remove card



PREPARATION OF PATTERN DATA

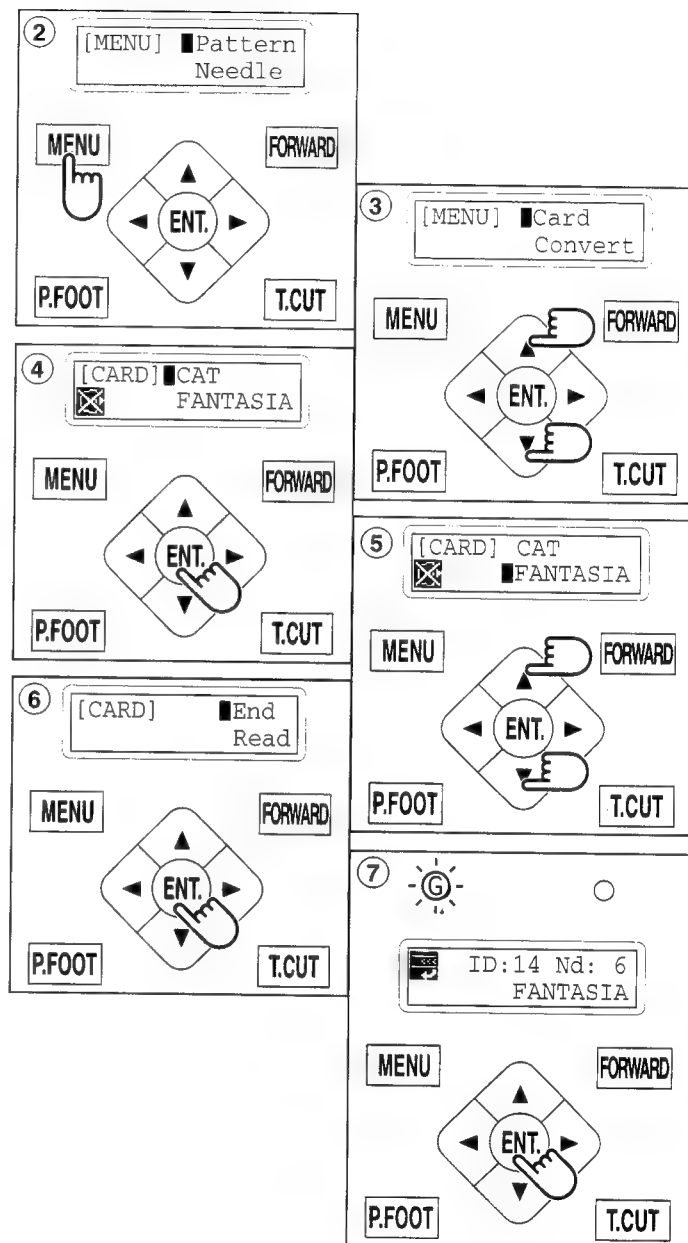
5-6

Memory card reading

1. Please insert the memory card into the machine as related in the "To insert a memory card" section above.
2. Press the "MENU" button until [MENU] is shown while the machine is stopped.
3. Press the "Up" or "Down" arrow button until the cursor points to "Card".
4. Press the "ENT." button.
The display will show a design name.
5. Press the "Up" or "Down" arrow button to choose the embroidery pattern.
6. Press the "ENT." button.
Section for select of end design data reading then back to drive mode and read next design data.
7. Press the "ENT." button.
To select "End" which will return you to the Drive Mode.

Or, if you wish to read another design, please select "read" and press "ENT".

Continue to follow the items thorough #5 above.



PREPARATION OF PATTERN DATA

5-7

●Select an embroidery pattern from memory

To select an embroidery design previously stored into the machine memory.

1. Press the "MENU" button until [MENU] is shown when the machine is stopped.

2. Press the "Up" or "Down" Arrow button until the cursor points to "Pattern".

3. Press "ENT." button.

The cursor will be on "Select".

4. Press the "ENT." button when showing [Select].

The Upper line indicates the current pattern ID number (if any).

The Lower line indicates the pattern name and ID number of a pattern you can select.

5. Press the "Up" and "Down" Arrow button to choose the embroidery pattern.

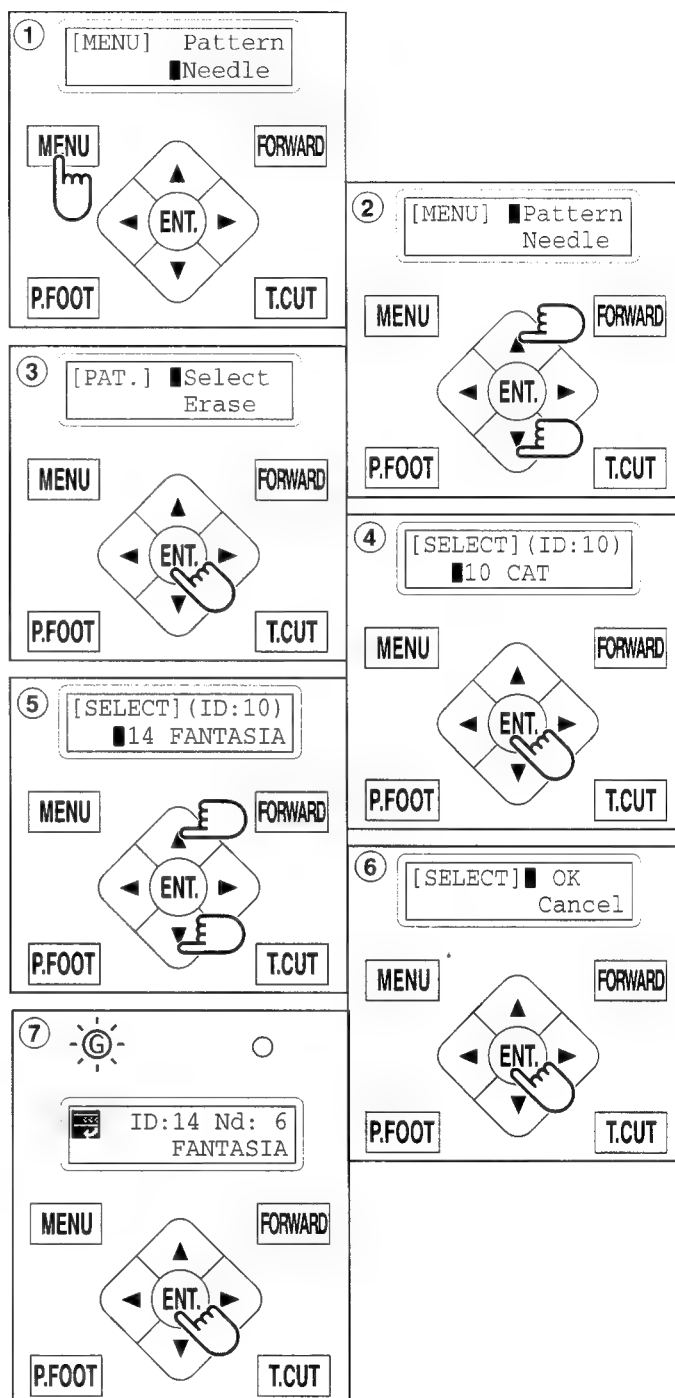
6. Press the "ENT." button.

The display will show "OK" or "Cancel".

7. Press the "ENT." button.

Make your selection and return to drive mode.

Press the "Down" Arrow button then press the "ENT." button to cancel selecting a design from the memory.



PREPARATION OF PATTERN DATA

5-8

●Erase memorized pattern from memory

This is to erase an unnecessary design data from the machine memory.

1. Press the "MENU" button until [MENU] is showing when machine is stopped.
2. Press the "Up" or "Down" arrow button until the cursor points to "Pattern".

3. Press the "ENT." button.

The display will show "select" or "Erase".

4. Press the "Down" Arrow button until the cursor points to "Erase".

5. Press the "ENT." button when showing [ERASE].

The display will show the ID no. and the name of the current design.

6. Press the "Up" or "Down" Arrow button to choose the embroidery pattern you wish to delete.

7. Press the "ENT. button".

The display will show "OK" or "Cancel".

8. Press the "ENT. button".

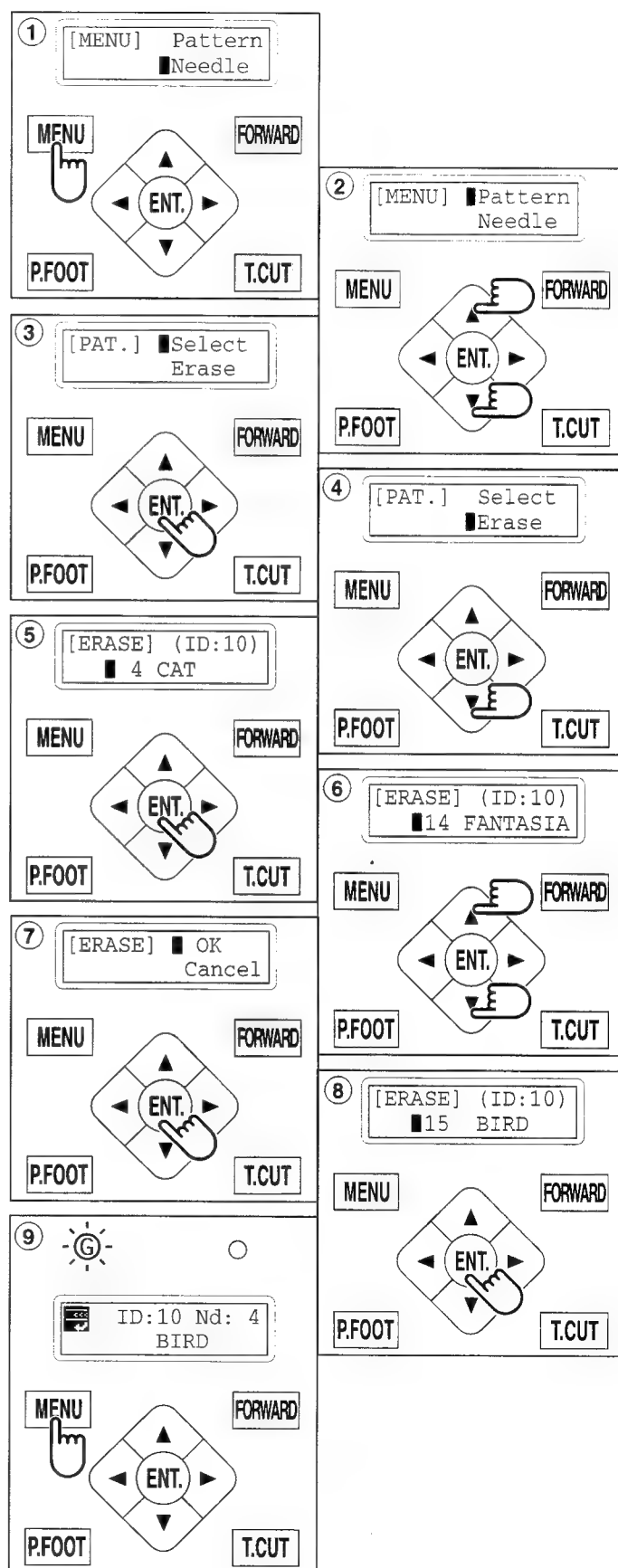
To delete the design and go back to procedure #6.

Push the "Down" arrow button and "ENT." button to cancel deleting of the design.

Return to the drive mode.

9. Finally, Press "MENU" button until the green lamp on the control box glows.

When a green light is showing, It means you are in the Drive mode and you can start sewing.



●Erase all designs

This is to erase all designs from the machine memory.

1. Press "MENU" button until [MENU] is showing while the machine is stopped.

2. Press the "Up" or "Down" arrow button until the cursor points to "Pattern".

3. Press the "ENT." button.

To "Select" or "Erase" the design.

4. Press the "Down" arrow until the cursor points to "All clr".

5. Press the "ENT." button when showing [CLEAR].

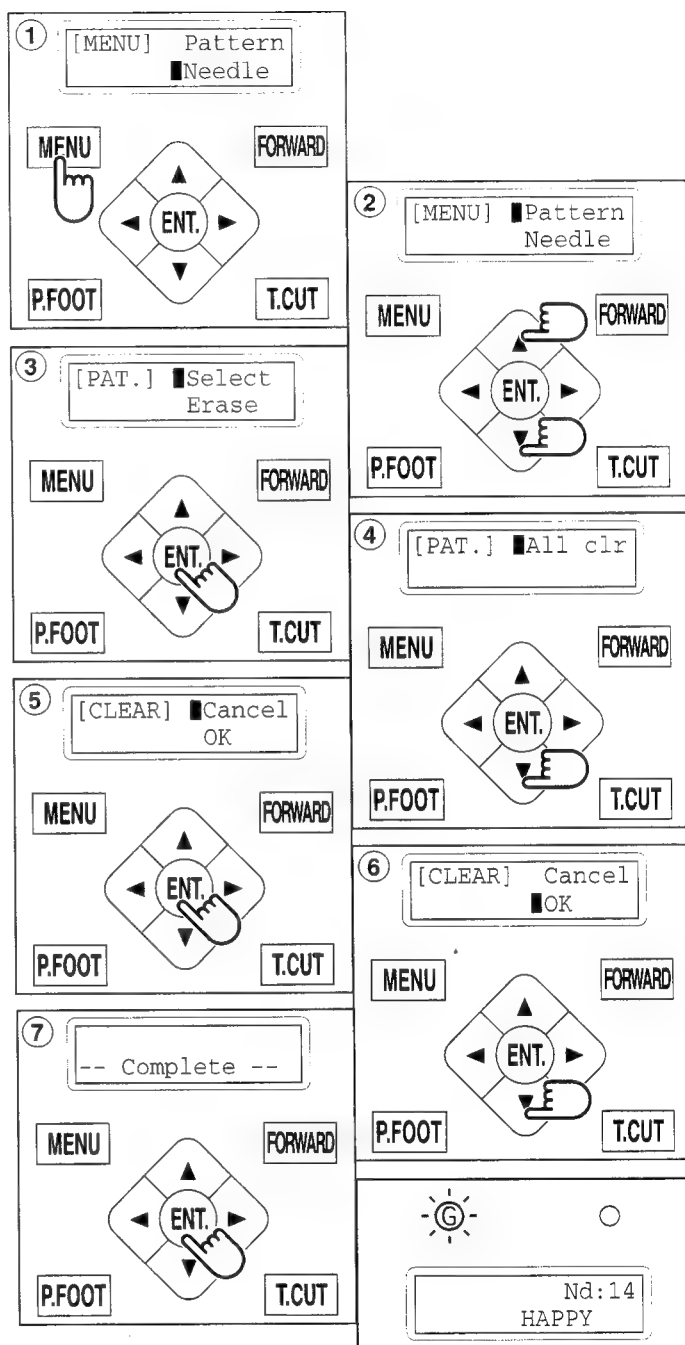
6. Press the "Down" arrow button until the cursor points to "OK".

7. Press the "ENT." button.

You will then return to drive mode.

Push the "Up" arrow button and then push the "ENT." button to cancel.

Returns to Drive mode after cancelation of design delete.



PREPARATION OF PATTERN DATA

5-10

●How to select monogram letters

Selecting letters using the built-in fonts.

1. Press the "MENU" button until [MENU] is showing when the machine is stopped.
2. Press the "Up" or "Down" arrow button until the cursor points to "Letter".
3. Press the "ENT." button when showing [LETTER].

Letter selection (Char)

To select letters. (15 letters maximum)

4. Press the "Up" or "Down" arrow button until the cursor points to "Char".
5. Press the "ENT." button.
The cursor will move to the left side of the display.
6. Press the "Left" or "Right" arrow button to select the position of the letter.
7. Press the "ENT." button.

The capital letters "ABCDEF" will be shown.

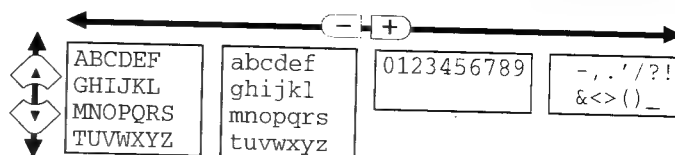
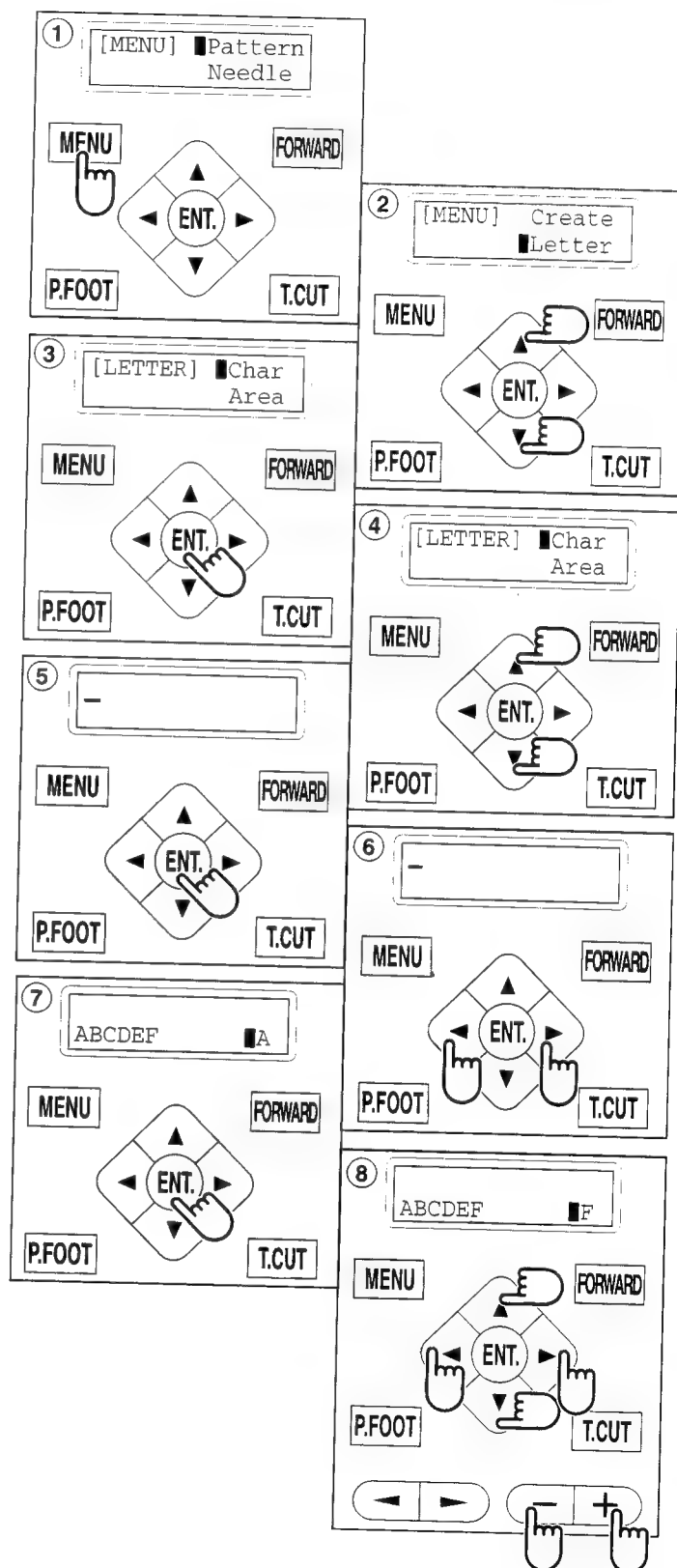
8. The cursor can move left or right and the selected letter will be indicated on the right side of the display.

You can change to the next group of letters by pressing the "Up" or "Down arrow" button.

Pressing the "+" button will change as the letters from capital to small letters to numbers to symbols.

Pressing the "-" button reverses the selections.

If you press the "MENU" or "STOP" button, you will return to item 6 above.



9. Press the "ENT." Button to select the indicated letter, number or symbol.

The cursor will move to the upper line.

10. Repeat the procedure 6. thorough 9 above. to select additional letters.

If you wish to insert a Space it will not be recognized as a letter.

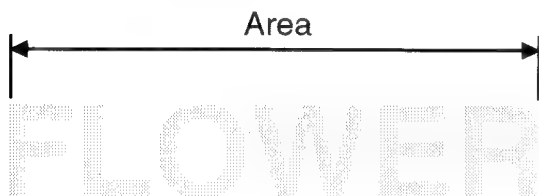
11. Press the "MENU" button when you are finished with the letter selection.

The display will show [LETTER].

Line Length (Area)

Enables you to change the line length.

Area : 0 to 290 mm (the maximum hoop size)



12. Select "Area" by use of the "up and down" arrow button.

13. Press the "ENT." button.

14. The size will increase by pressing the "Up" arrow button.

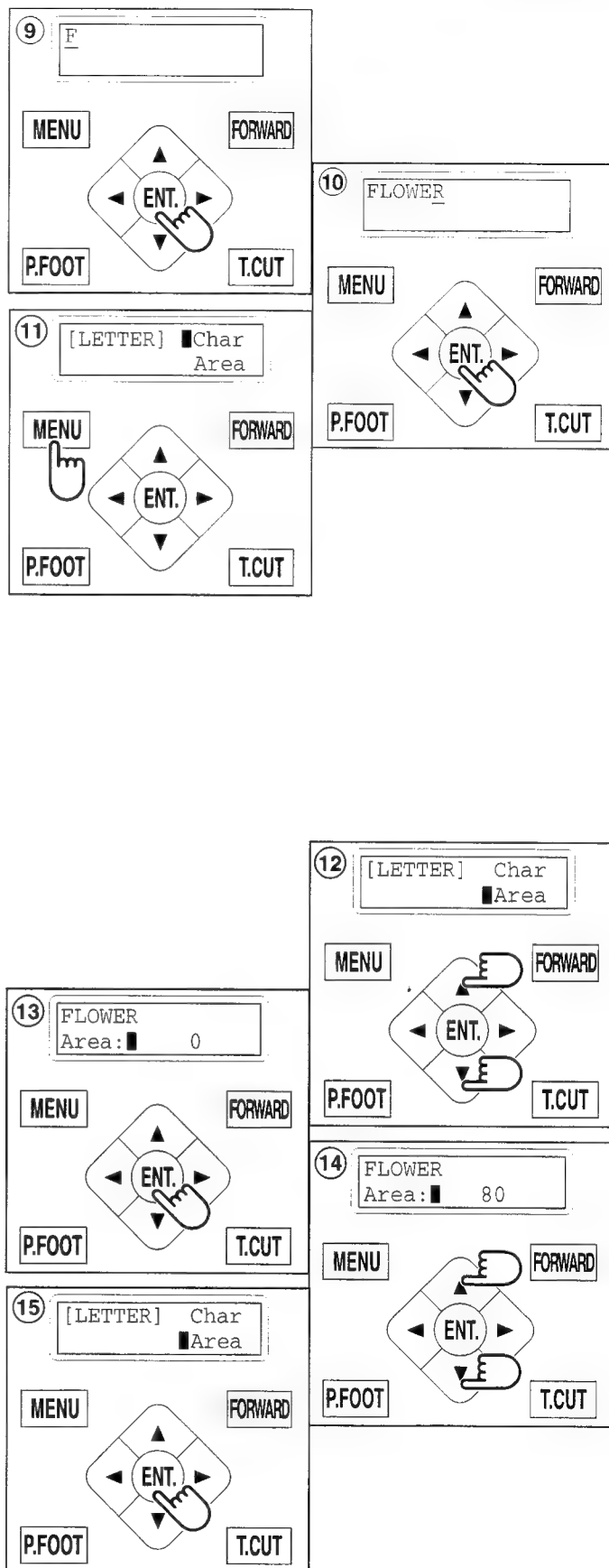
The size will decrease by pressing the "Down" arrow button.

Holding down the button for more than 10 numbers will start.

Them increasing (or decreasing) by 10 numbers at a time.

15. Press the "ENT." button.

Back to procedure 12.



PREPARATION OF PATTERN DATA

5-12

Letter Height selection (Size)

To select the letter size from Large , Middle or Small.

The letters can be set to one of 3 sizes.

16. Select "Size" by use of the "Down" arrow button.

17. Press the "ENT." button when showing [SIZE].

18. Press the "Up or "Down" arrow button to select the size of the letter.



Large : 15 mm height
Middle : 10 mm height
Small : 4 mm height

19. Press the "ENT." button.

20. Press "ENT." button.

Make your selection and return to procedure 16.

If you want to cancel this procedure, put the cursor on "Cancel" and push the "ENT." button.

The status will be back to item #16 above.

Font Selection (Style)

Enables you to select the preferred font. Selections are: Style 1, Style 2, or Style 3.

P 12-3

21. Select "Style" by use of the "Down" arrow button.

22. Press the "ENT." button when the display shows [STYLE].

23. Select fonts by using the "Up" and "Down" Arrow buttons.

Style 1 : **ABCDE**
Style 2 : **ABCDE**
Style 3 : *ABCDE*

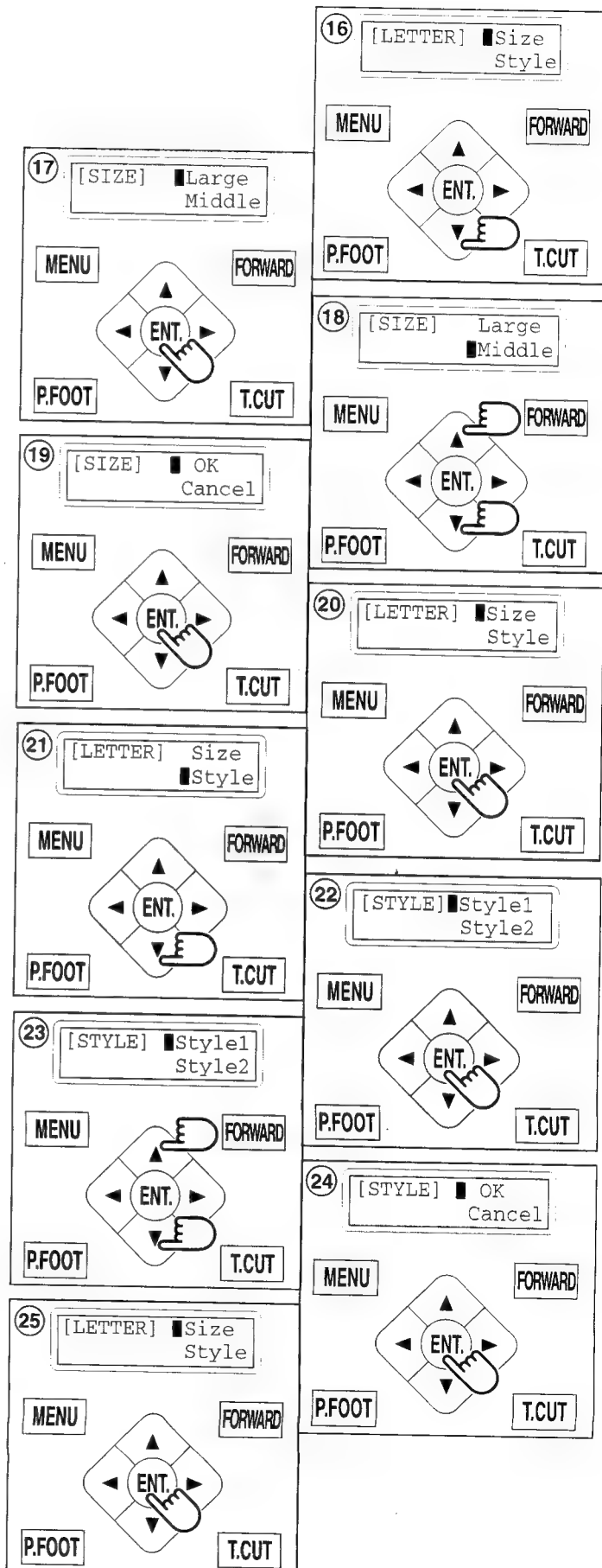
24. Press the "ENT." button.

25. Press the "ENT." button.

Make your selection and return to procedure 21.

If you want to cancel this procedure, put the cursor on "Cancel" and push the "ENT." button.

The status will be back to item #21 above.



Review mode (Mode)

Enables the user to review the details of their letter selections, the line length selection, letter size selection, and font selection.

Also, you can create embroidery data from the letter settings.

26. Select "Mode" by pressing the "Down" arrow button.

27. Press the "ENT." button.
To select "Refer" or "On".

Select (Refer)

28. By pressing the "ENT." button on [REFER] will display the letter(s) which you have selected.

29. By pressing the "Down" arrow button will display the number which you have selected as line length.

30. Pressing the "Down" arrow button again will display the letter size selection.

31. Pressing the "Down" arrow button again will display the font Selection.
To complete your letter selections.

32. Press the "MENU" button.

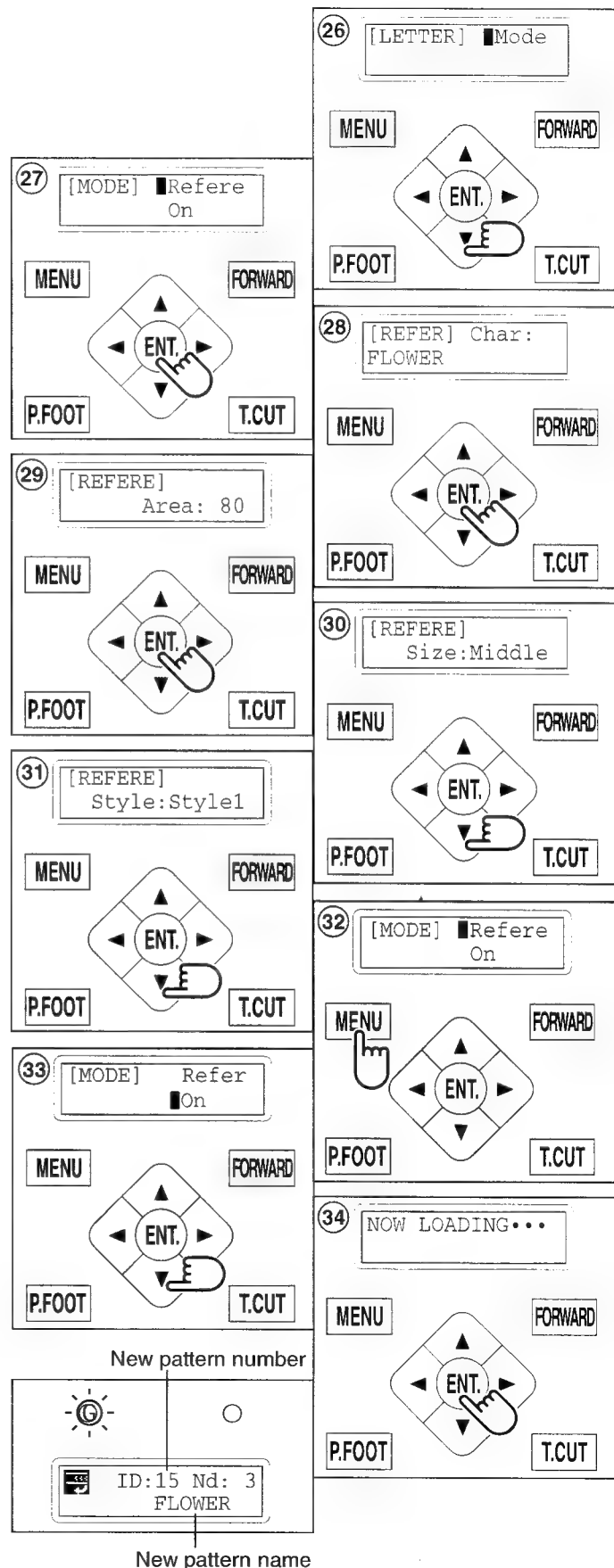
Select review mode "On"

To convert the Letters into an embroidery design.

33. Select "On" by use of the "Down" arrow button.

34. Press the "ENT." button.
"NOW LOADING ***" will appear and the new pattern data will be created. Then you will return to drive mode.

The first 8 letters will be shown as the name of the pattern which you have made by letter selection.



If when you select "On" the following is displayed.

"Area ovr"... Line length will be too long.

If resetting is needed

B. Press the "ENT." button with the cursor pointed at "Cancel".

You will be back to #33 above.

Reset the line length again as on page.

P 5-11 or.

Change the letter size selection as shown.

P 5-12

If it is acceptable to increase the size as shown

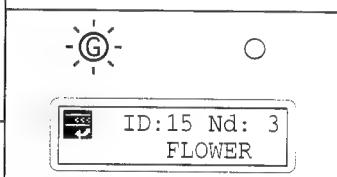
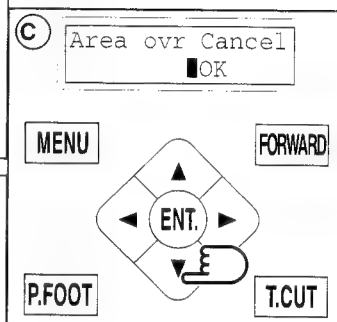
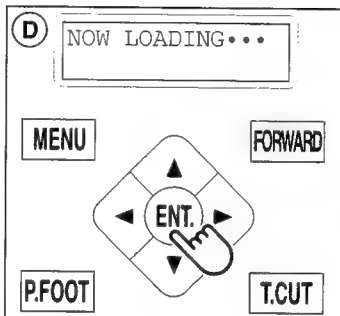
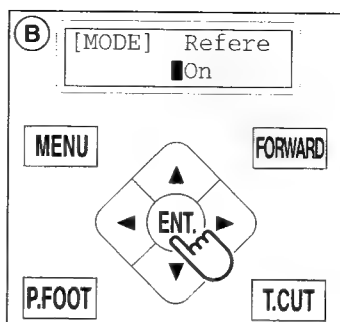
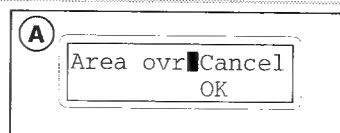
C. Select "OK" by use of the "Down" arrow" button.

D. Press the "ENT." button.

"NOW LOADING ***" will be appear, new pattern data will be made and then you will return to drive mode.

First 8 letters will be shown as the name of the pattern which you have made by letter selection.

The distance between the letters will be set to 0.8 mm



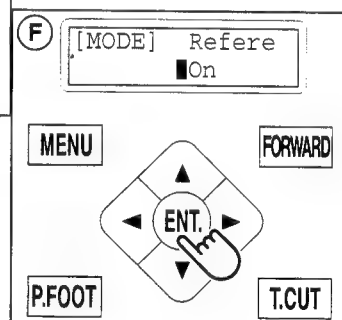
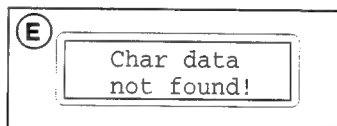
If the following is displayed in "Review" mode.

"Char data not found!".....the letters you have selected are not available.

F. Press the "ENT." button.

The status will be back to procedure #33.

Set the letter selection. P 5-10



Select the review mode "off"

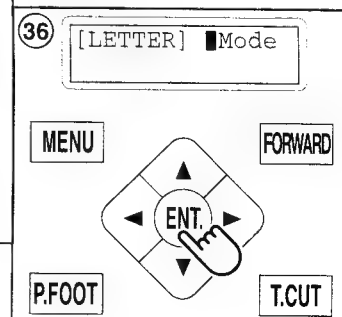
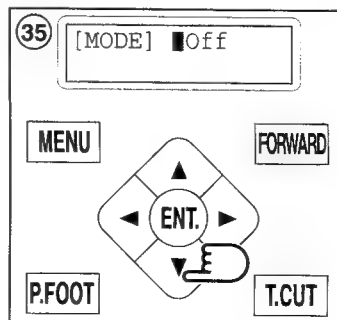
35. Use the "Down" arrow button to point the cursor to "OFF" at procedure #33.

36. Press the "ENT." button.

The status will be back to procedure #26 as above.

Please complete the steps from #27 to reconfirm your selections.

Please reset items from #33 to Review mode (ON).



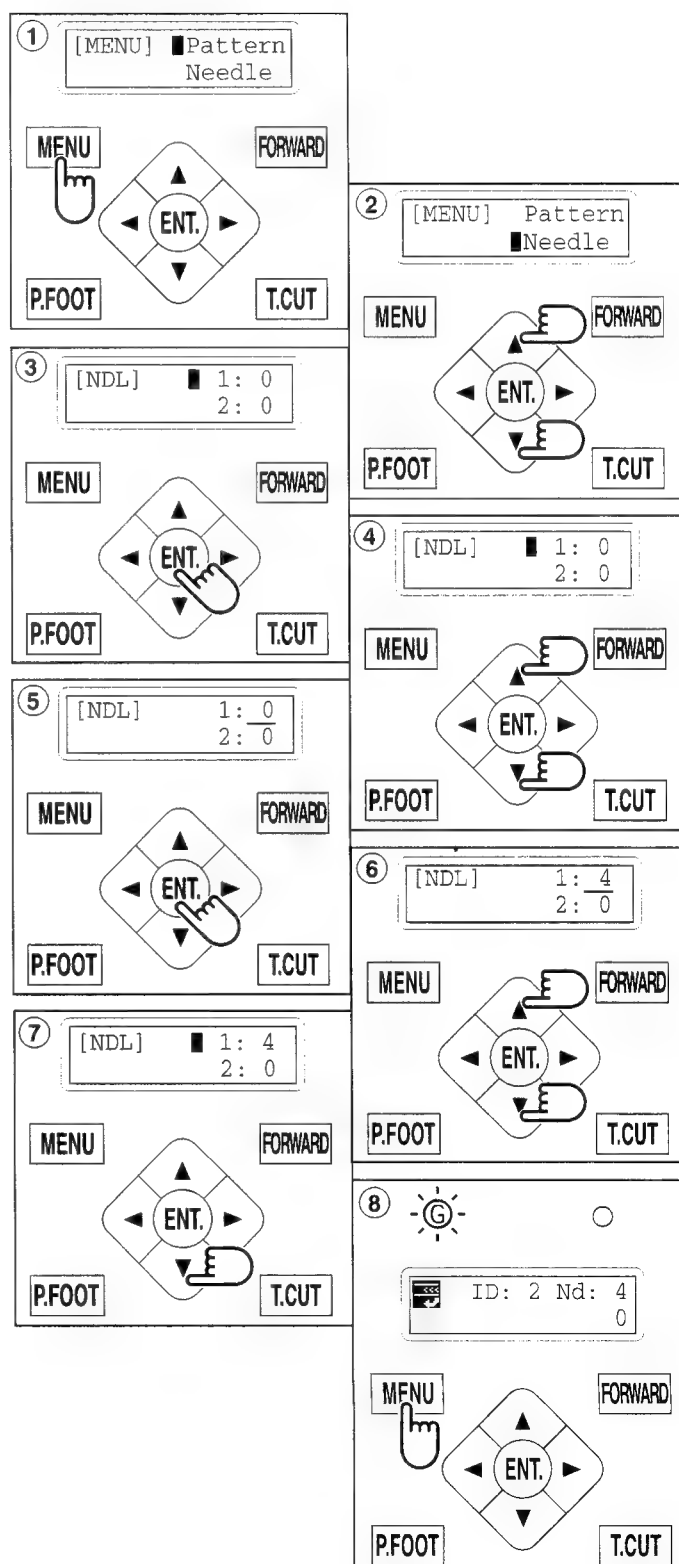
■ All the selected settings will be deleted when the power source is turned off. Please be careful when making embroidery letters.

Needle numbers are set for each color number of the selected pattern.

When a color change is set, the machine automatically changes to the selected needle and continues sewing automatically.

1. Press the "MENU" button until [MENU] is showing when the machine is stopped.
2. Press the "Up" or "Down" arrow button until the cursor points to "Needle".
3. Press the "ENT." button when showing [NDL].
4. Press the "Up" and "Down" arrow button to point the cursor at the required color change number.
Ex. : Needle no. 4 to be the first color.
5. Press the "ENT." button.
An Underscore will be shown when no needle has been selected.
6. Press the "Up" and "Down" arrow button to set the preferred needle number.
The number will increase by pressing the "Up" arrow button.
The number will decrease by pressing the "Down" arrow button.
7. Press the "ENT." button.
Repeat procedure 4. thorough 7. to set any other color changes required.
8. Finally, Press the "MENU" button until a green lamp shows on control box (Drive Mode).

When the green light shows you are in the Drive mode and you can start the embroidery.



SETTING AUTOMATIC COLOR CHANGE

5-16

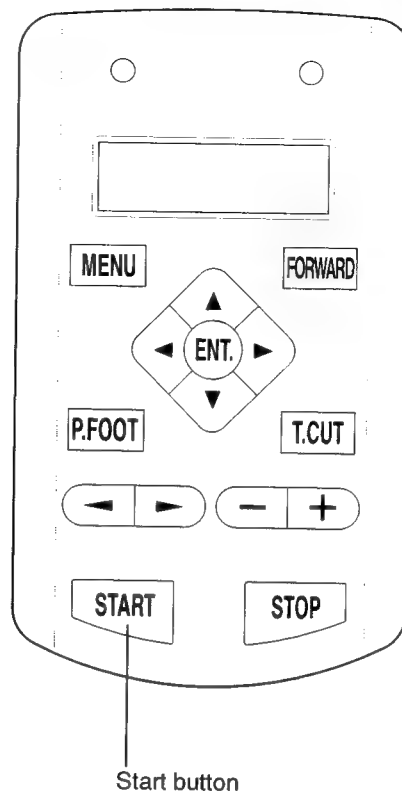
To set a color change stop

When a color change stop is set to a color number, the machine will stop after it finishes sewing the marked needle number.

The following message will be shown.

>>Change Stop

When you wish to start again, press the start button.



1. Follow the steps in order from 1. thorough 5 above.

2. After selecting the needle #, press the "Right" arrow button.

A " * " mark will be shown on the side of the color number.

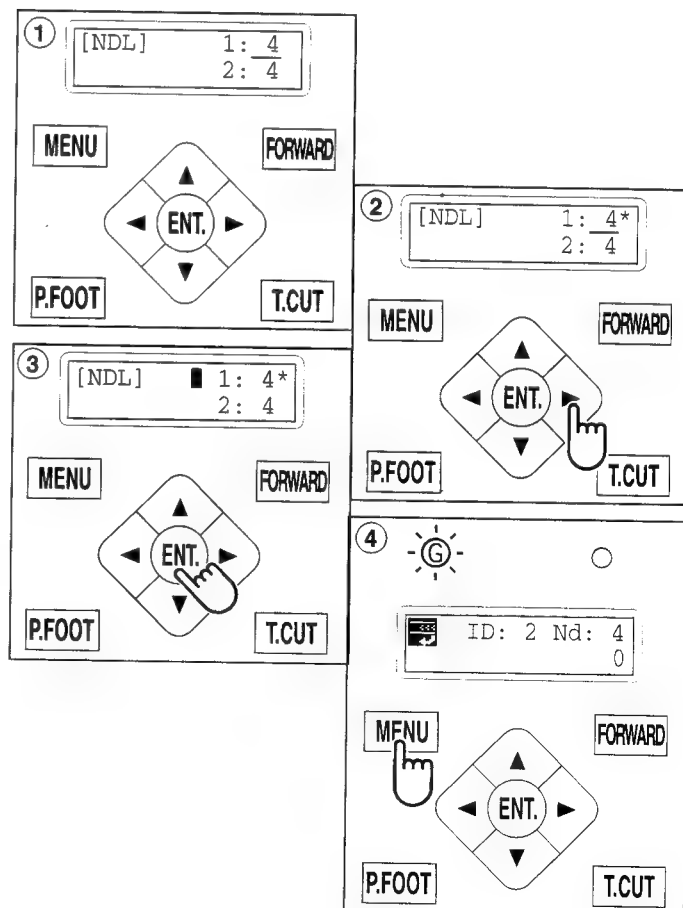
If you press the "Left" arrow button, it will remove the setting.

3. Press the "ENT." button".

You can repeat these steps for each color you want to stop after.

4. Finally, Press the "MENU" button until a green lamp shows on control box (Drive Mode).

When a green lamp is showing you are in the Drive mode and you can start the embroidery.

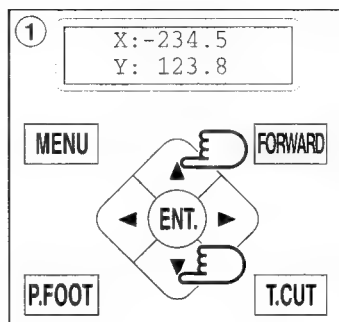


● Installing and removing the frame base

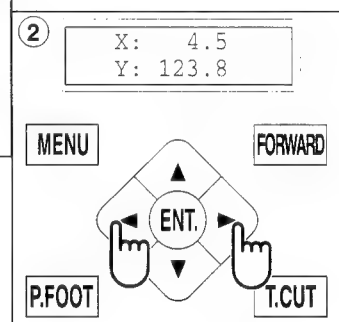
Please attach the frame base to the carriage when you wish to use a tubular embroidering hoop.

Please remove it in the reverse order of installation.

1. Move the carriage to the position as shown by pressing the "Up" or "Down" arrow buttons on the control box.

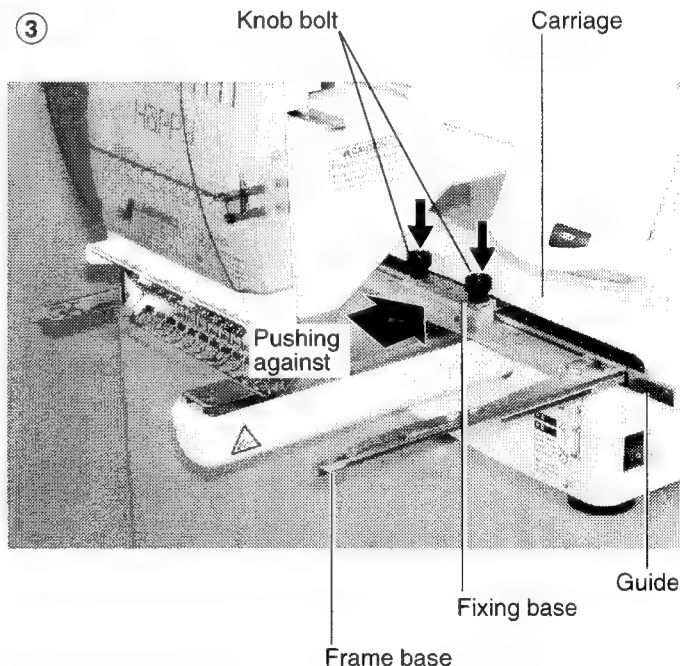


2. Move the arm base to the approximate center of carriage (left to right) using the "Left" and "Right" arrow buttons.



3. Place the frame base on the carriage guide and tighten the knob bolt on the tubular arm holder completely.

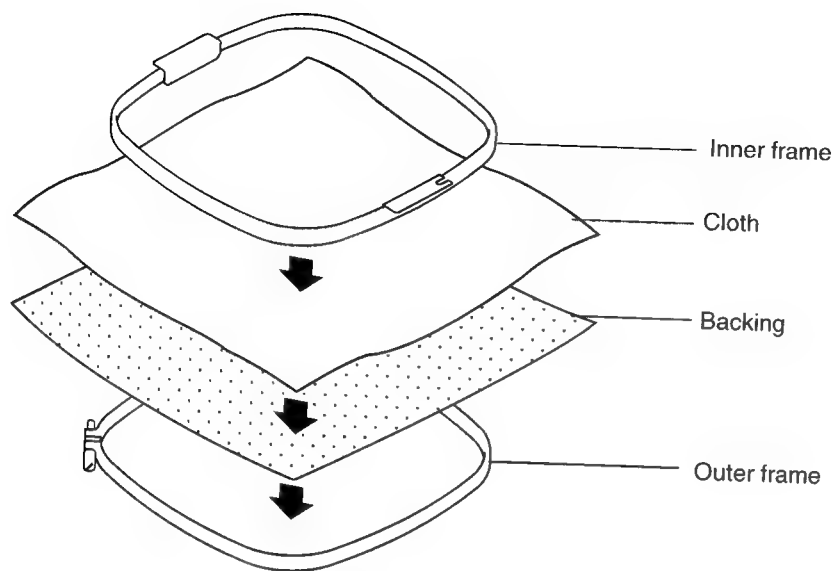
Move the frame base right or left when it is hard to go to the knob bolt.



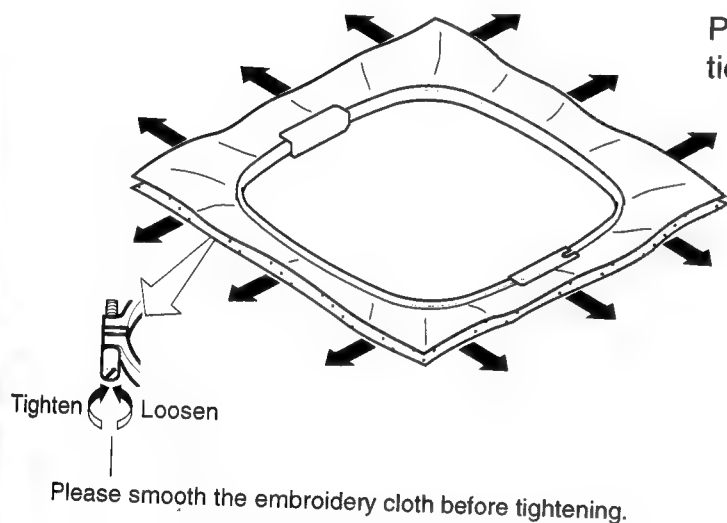
SEWING USING THE TUBULAR EMBROIDERING FRAME

6-2

●How to hoop

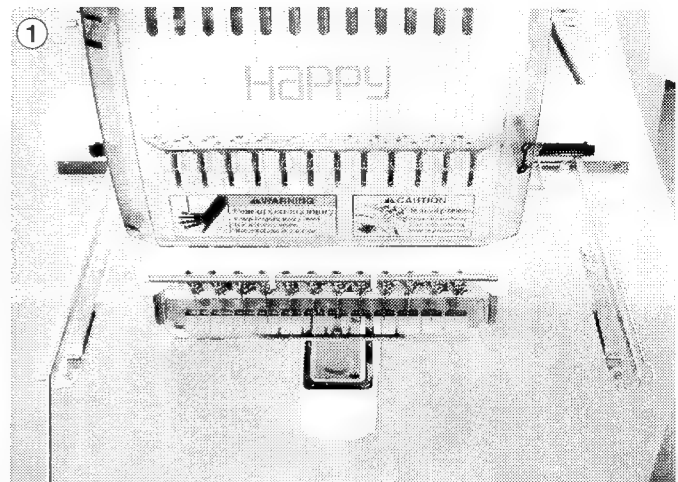


Please smooth the embroidery cloth in all directions, but do not stretch it.



●Putting the hoop in the machine

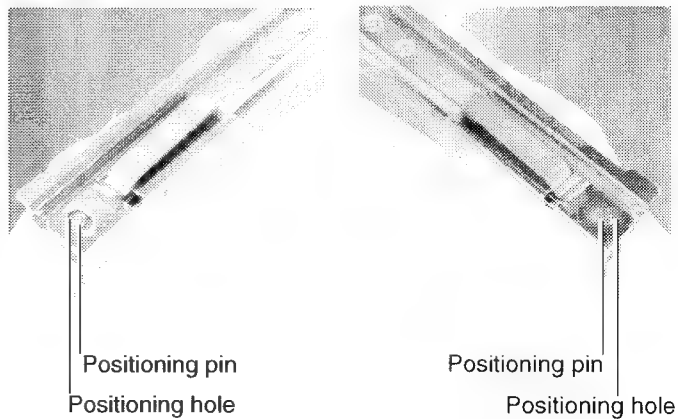
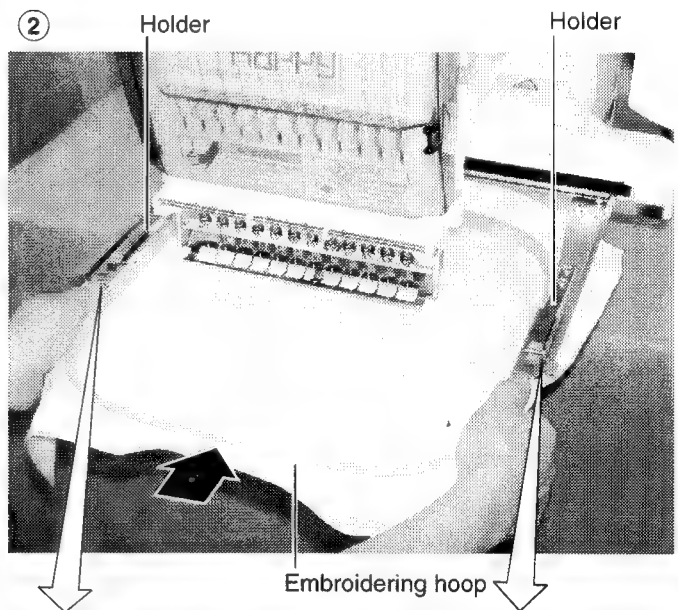
1. Please move the frame base to the approximate center position before inserting the tubular embroidering frame.



Frame base

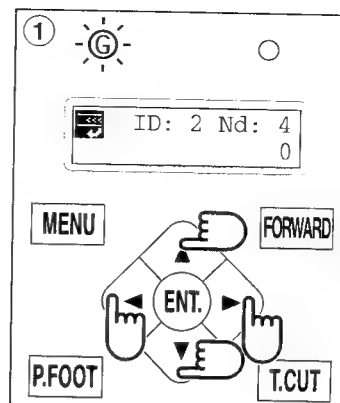
2. Insert the embroidery frame to it's full depth.

Make sure that the holder-positioning pin is inserted into the positioning hole of the frame base on each side.

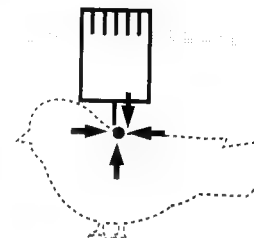


● Starting to sew

1. Press the arrow buttons (up, down, left, right) and move embroidering frame position to the origin point of the pattern (usually the center).



● : Original point (Start point)

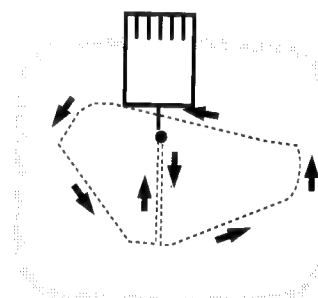
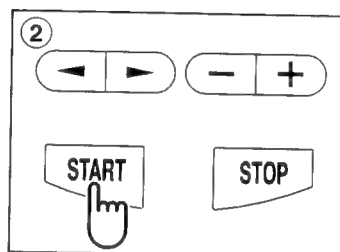


2. Press the "START" button.

The embroidering frame moves for the design trace. 5-3

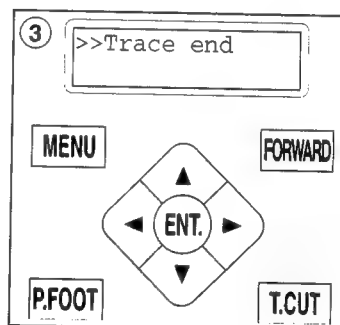
Make sure that the pressure foot and needle does not hit the frame.

If you push and hold the start button, the machine will discontinue the trace and move to the first stitch point.



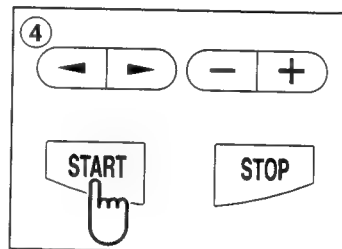
3. The display will show ">>Trace end" and the embroidery frame will stop moving.

The embroidering frame has moved to the first stitch point of the pattern.



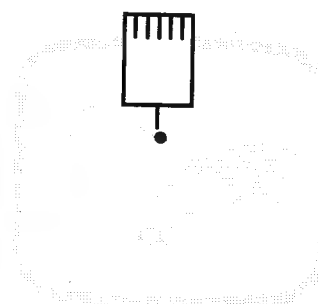
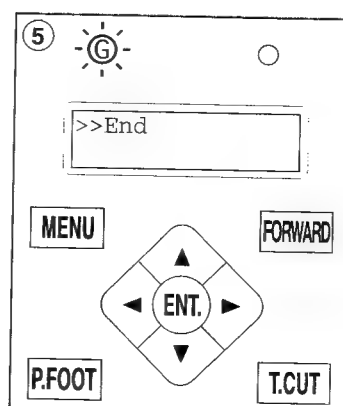
You can confirm outline trace and the position of the design.

4. If you are satisfied that the design will fit into the hoop by viewing the trace, Press the "START" button again to begin sewing.



5. After finishing your design, the display will show ">>End" and the machine will stop.

The embroidery frame returns to the origin point automatically.



●Cap frame setting

2 type of cap frames, Normal and Wide, are available with this model. When you embroider by using cap frame, please ensure that a correct setting is selected according to each cap frame.

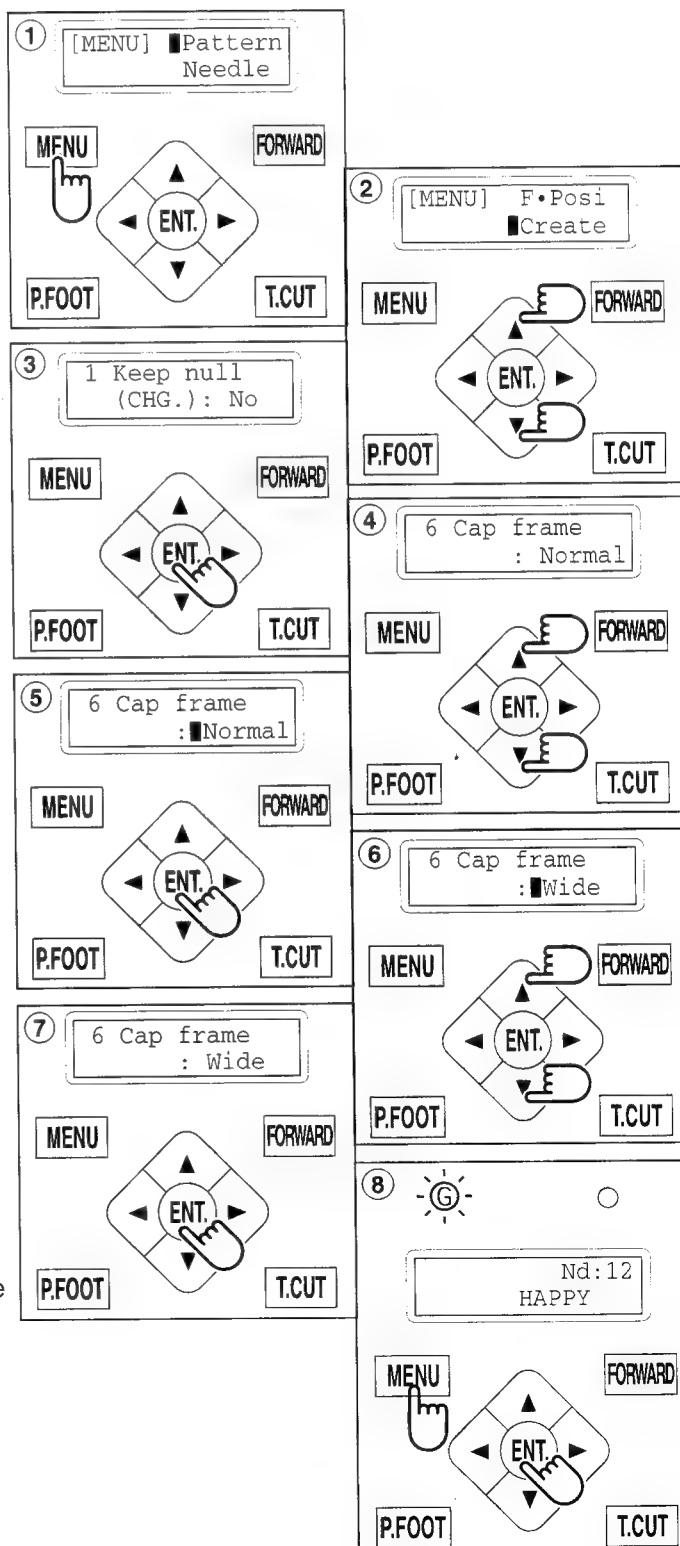


CAUTION: To avoid problems.

Machine end cap frame might be damaged in case the operation under incorrect setting cap frame.

1. Press the "MENU" button until [MENU] is showing when the machine is stopped.
2. Select "Create" by using the up and down "Arrow" buttons.
3. Press "ENT." button. The indicator will display a machine setting.
4. Press up and down "Arrow" button until it comes to the setting of "Cap frame".
5. Press "ENT." button to display a cursor on the indicator.
Now you can change the setting.
6. Press up and down "Arrow" button to choose "Normal" or "Wide".
7. Press "ENT." button to retain this new setting.
8. Finally, Press the "MENU" button until the green lamp is showing on the control box.

When the green lamp is glowing, you are in Drive mode and can begin sewing.



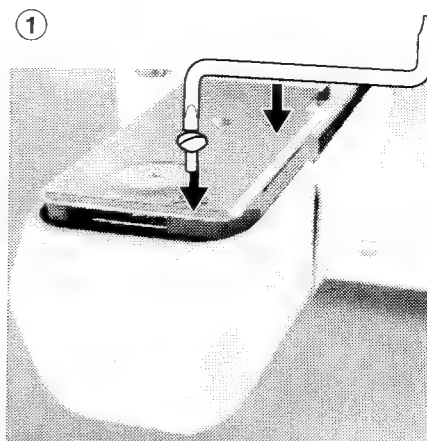
CAP FRAME (OPTION)

7-2

●Changing the needle plate

You need to change the needle plate when you embroider a cap.

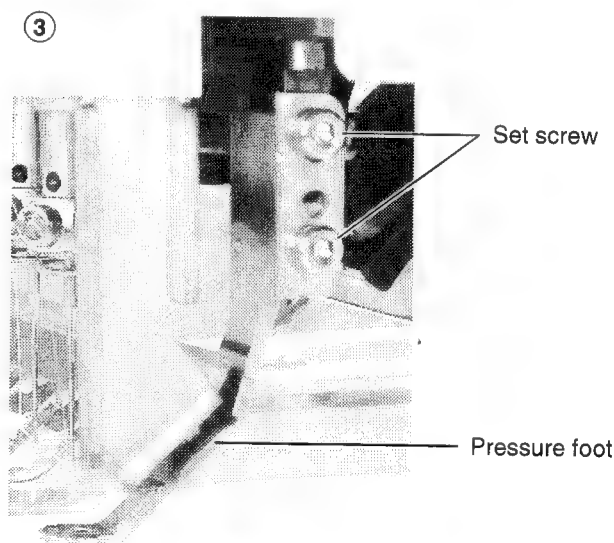
1. Remove the set screw (2 pieces) by offset driver and remove the needle plate.



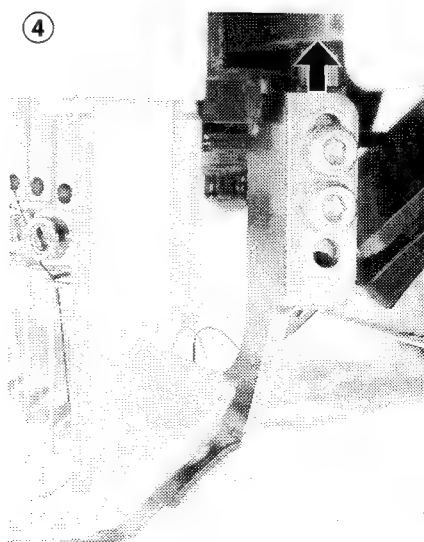
2. Put the needle plate for cap on the bed and tighten with the set screw.



3. Loosen the set screw (upper side) of pressure foot and unscrew the set screw (lower side).



4. Press up the pressure foot and tighten set screw (upper side) and tighten set screw (lower side) as it shown in the diagram.



CAP FRAME (OPTION)

7-3

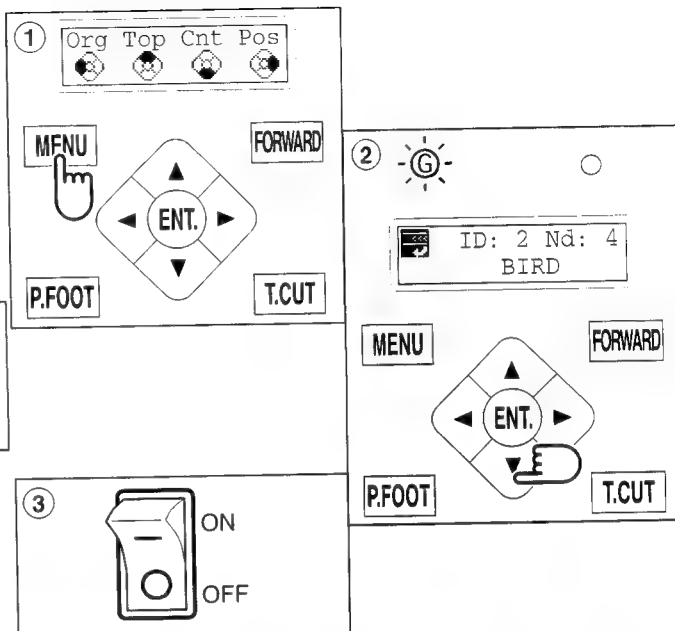
●Installing and removing the cap drive frame

You need to install the cap drive frame into the carriage when you embroider a cap.
Please remove by reverse order of these step.

1. If you press and hold the menu button for a few second, you will see the direct frame movement menu when the machine is stopped.
2. Press the "Down" arrow button.
Embroidery frame moves to the center automatically.

CAUTION: To prevent accidents.
The frame moves quickly.
Keep hands away from the frame.

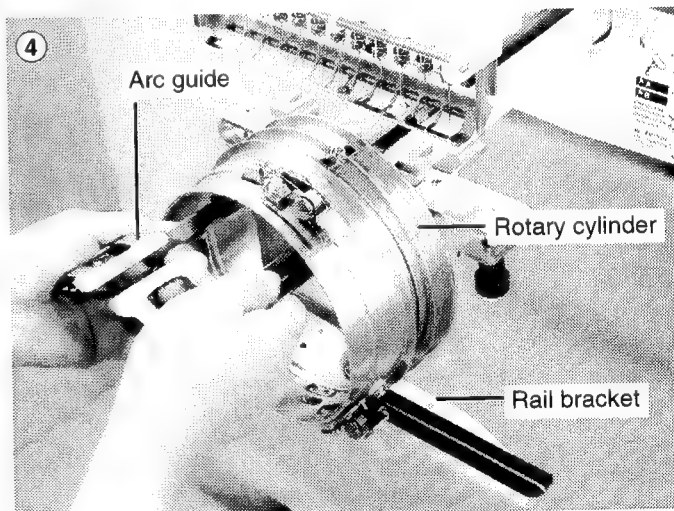
3. Turn off the power switch.



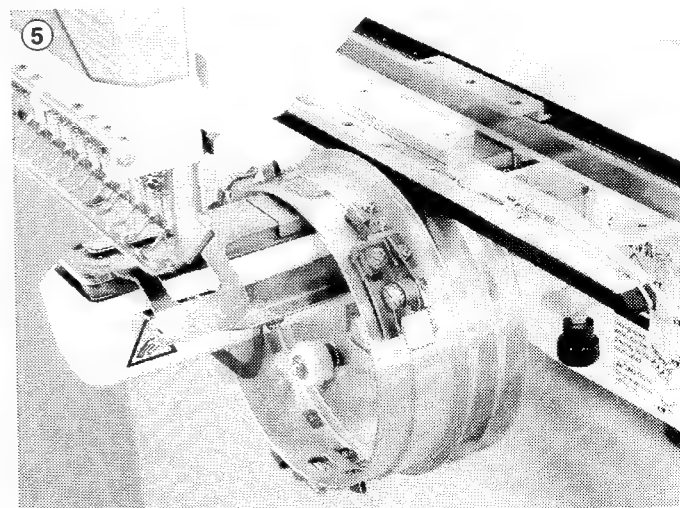
4. Hold the arc guide by hand and the rail bracket has to be faced downward, then install into the bed as showing picture.

When you hold the cap drive frame assembly, be sure to hold it by the guide.

If you hold the rail bracket, your fingers will be pout between the rail bracket and the rail bracket rotary cylinder and rail bracket can get out of place.



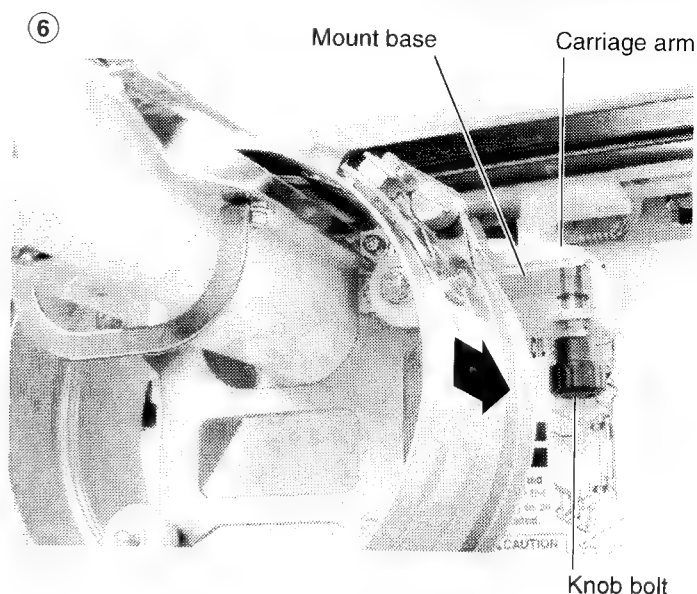
5. Move the cap drive frame backwards away from you and rotate the rotary cylinder until the rail bracket is upward as shown at right.



CAP FRAME (OPTION)

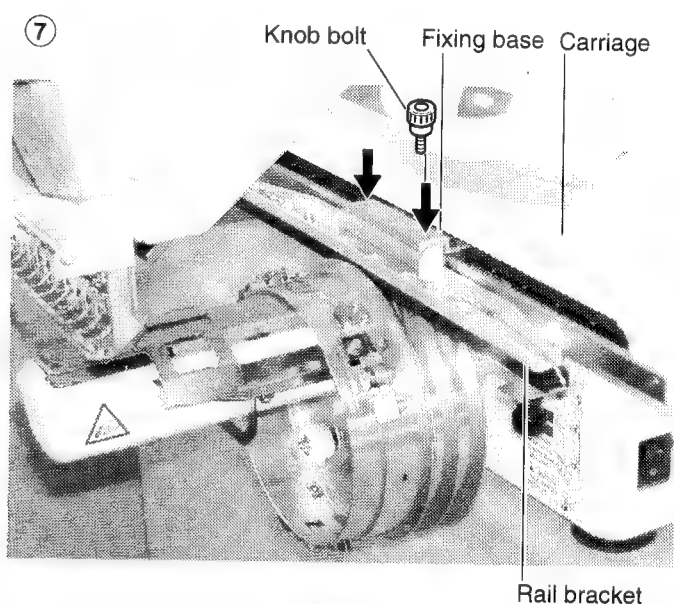
7-4

6. Move the cap drive frame in the direction of the arrow, adjust right-and-left mount base to carriage arm and fix them by knob bolts.



7. Fix the rail bracket to fixing base by knob bolts.



You can move the fixing base right or left when it is hard to get to the set screw.



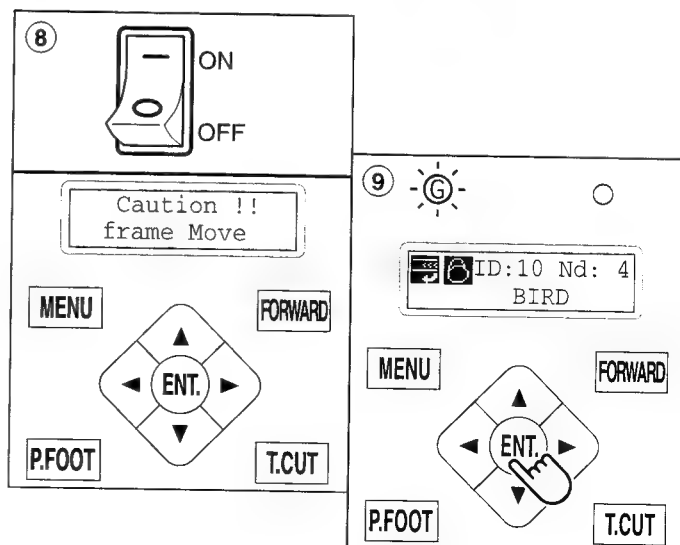
8. Turn on the power switch.

9. Press the "ENT. button".

The cap drive frame moves to the center of embroidery area automatically.

 (Normal cap frame) or  (Wide cap frame) will be indicated on the panel.

CAUTION: To prevent accidents.
The frame moves quickly.
Keep hands away from the frame.



●Normal cap frame

Adjustment

When you hoop a cap on the cap frame, please adjust in the following manner:

1. Adjust position of clamp support to the height of the cap. (Fig. 1)
Adjust the height by removing the inner screws at left and right.
2. Adjust the clamp to fit the clamp support. (Fig. 2)
Loosen wing nuts at left and right to adjust.

If you adjust position of clamp support and shorten distance H, embroidery area will be reduced in Y direction (depth).

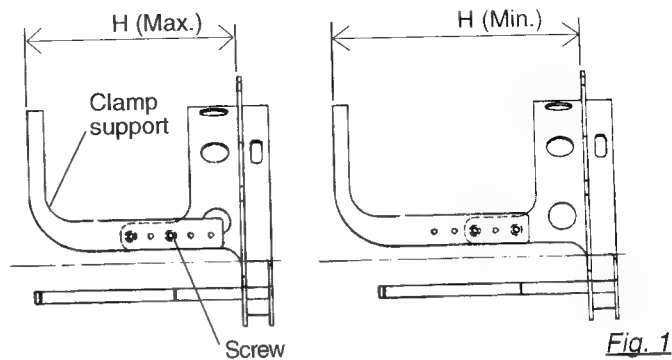


Fig. 1

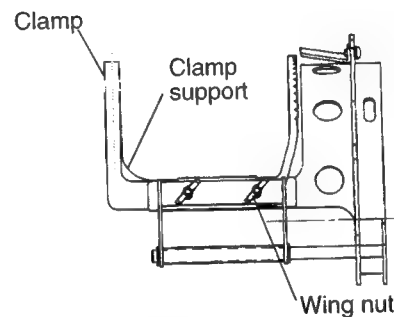


Fig. 2

3. Adjust up and down position of the hook according to the thickness of the cap to adjust clamp tension. At this moment, the hook should open and close without feeling too tight.
(For adjustment, proceed to procedure 5 below).
Use the wing nuts for adjustment. (Fig. 3)

If the hook is extremely tight, it will damage the cap frame permanently.

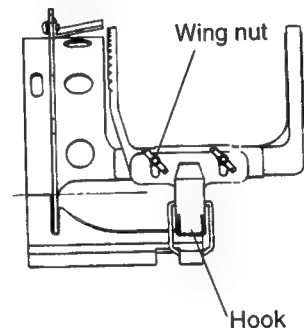


Fig. 3

4. Put the cap frame without a cap to cap drive on the machine.
(Please refer to operation 8 "Hooping caps" on next page for mounting).
At this time, adjust so that guide on cap drive frame doesn't strike clamp support and gap is reduced as small as possible. Remove screws at left and right to adjust. (Fig. 4)

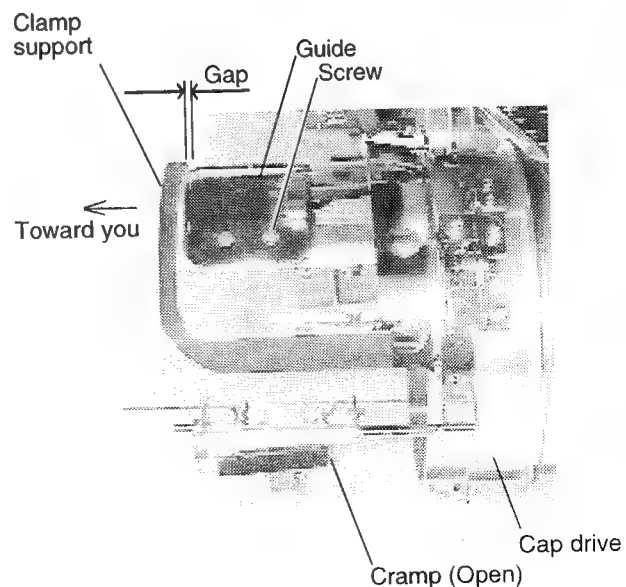


Fig. 4

CAP FRAME (OPTION)

Hooping caps

7-6

1. Place cap stretcher securely on a sturdy work bench.
2. As shown in Fig. 5, hold cap frame with both hands and place on cap stretcher. By pushing locking levers at 2 places with fingers, place cap frame so that center guide of cap stretcher fits in concave area of cap frame.

Confirm that the cap frame is securely placed on cap stretcher.

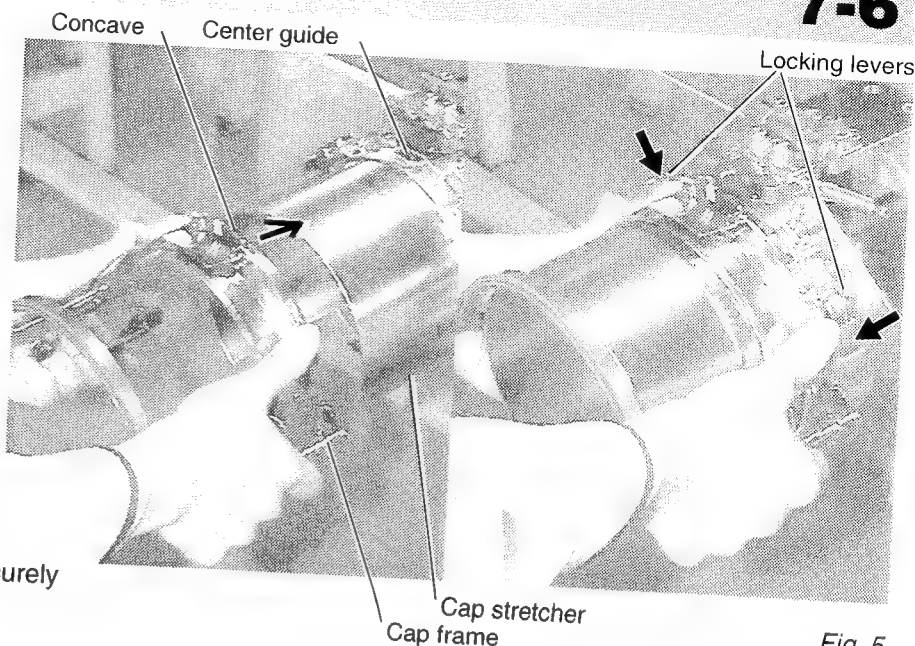


Fig. 5

3. As shown in Fig. 6, open clamp and keep open to the right.
4. Turn the sweatband of the cap inside out a slide onto the cap frame as shown. Place it so that the edge of the sweatband contacts the flange of the cap frame.

Please place one or two sheets of non-woven fabric (backing) of standard thickness under unstructured caps.

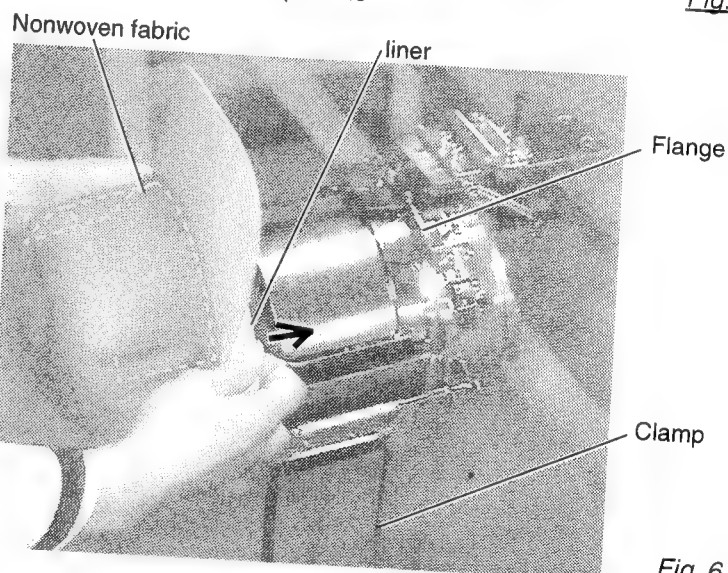


Fig. 6

5. As shown in Fig. 7, pull back part of cap and hook it on the hook and smooth out creases on cap. At this time, align the center of the cap to the center mark on the cap frame so that notched portion of the clamp fits into the seam of the visor.
6. Latch the hook, taking care not to cause wrinkles in the cap.

If you can't get rid of wrinkles on the cap, adjust the cap frame again according to "Adjustment" on the previous.

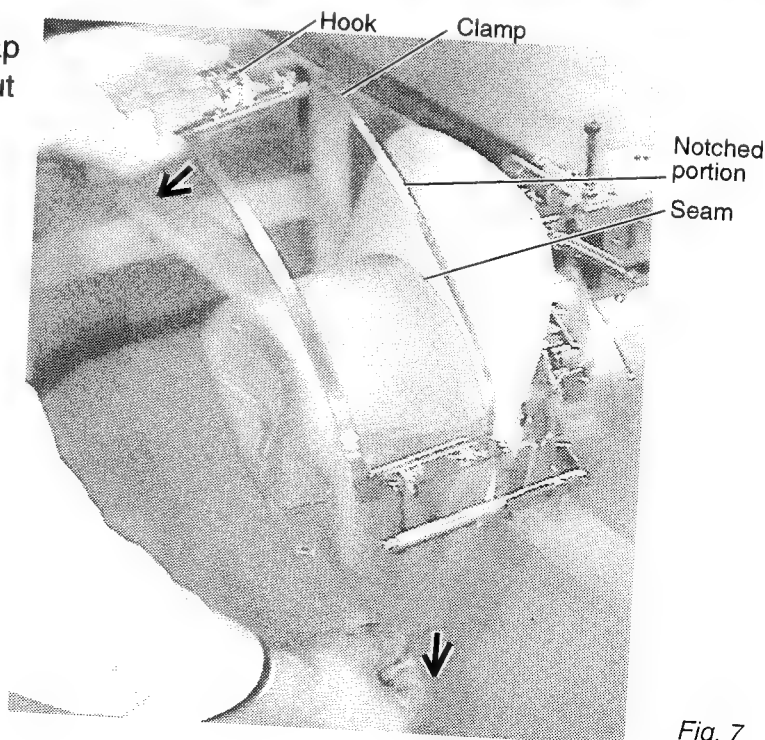


Fig. 7

CAP FRAME (OPTION)

7-7

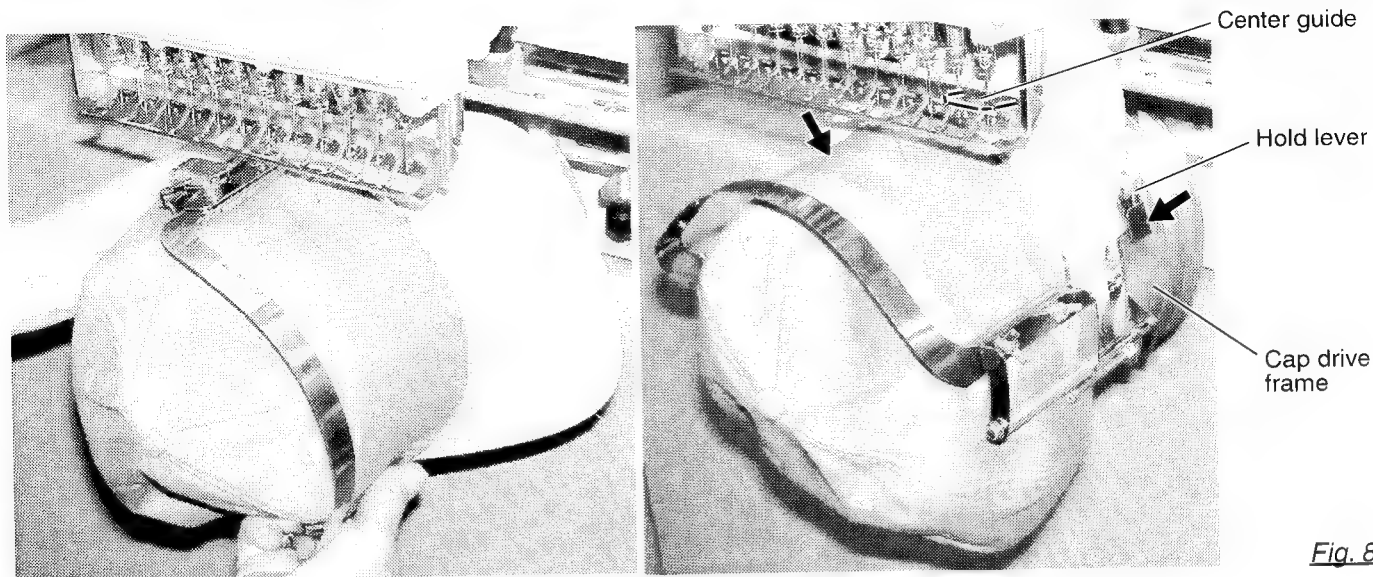


Fig. 8

7. Remove cap frame with cap from cap stretcher.
8. As shown in Fig. 8, place the cap frame with the cap on cap drive assembly of the embroidery machine.
You will have to rotate the cap brim to the side in order to get past the needle case.
By pushing the holder latches in 2 places as shown, place the cap frame with cap on so that the center guide of the drive frame assembly fits into the notch of the cap frame.

Confirm that the frame is firmly seated on the cap drive frame assembly without any gaps.
If there is a gap between the cap frame or the cap drive cap frame holding lever doesn't go into hole the cap frame, loosen the set screw on the hold lever to adjust.

CAP FRAME (OPTION)

7-8

● Wide cap frame

Adjustment

When you fix cap to cap hold frame, please adjust in the following manner.

Make sure to do the adjustment of the cap hold frame. If it is not adjusted properly, it may cause the deformity, damage of the cap, damage of the cap hold frame and break of the cap grip. After adjusting the cap hold frame, make sure the cap to be set properly.

1. Adjust the length of the cap grip to suit the thickness of the fabric. At this moment, hook should open and close without feeling heavy. (For the adjustment follow the next page "Hooping caps" item 1 to 5.) The adjustment to be done by three adjusting screws. (Fig. 1)

If the cap grip is loose, even after hooked the cap is not fixed tightly and the cap is moving. (Fig. 2)

If the cap grip is too tight, you feel heavy when it is hooked and the grip bites into the cap too much. (Fig. 3)

If you feel hook extremely heavy in opening and closing, there is a case that cap hold frame will lose its shape or damage.

2. Adjust the guide position to suit the height of the cap. Remove screws at left and right to adjust. (Fig. 4)

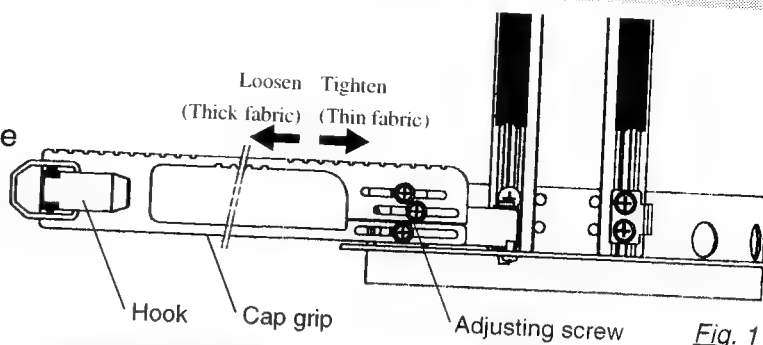


Fig. 1

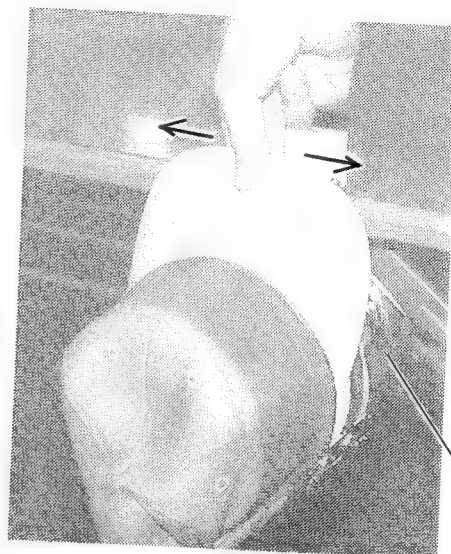


Fig. 2

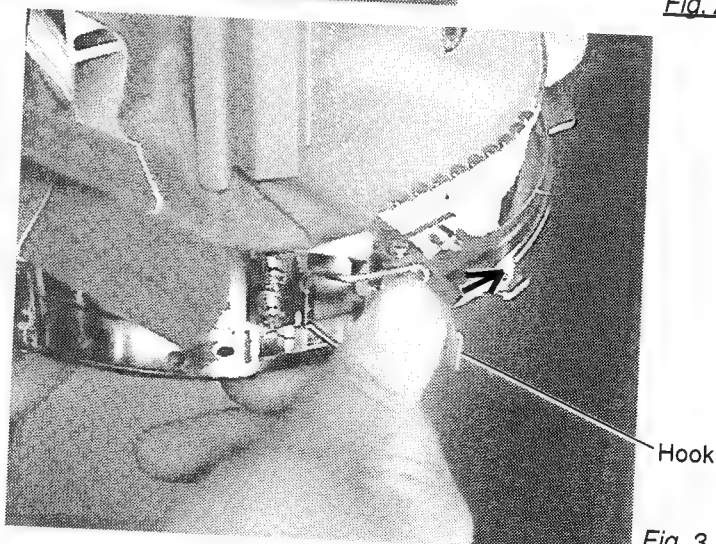


Fig. 3

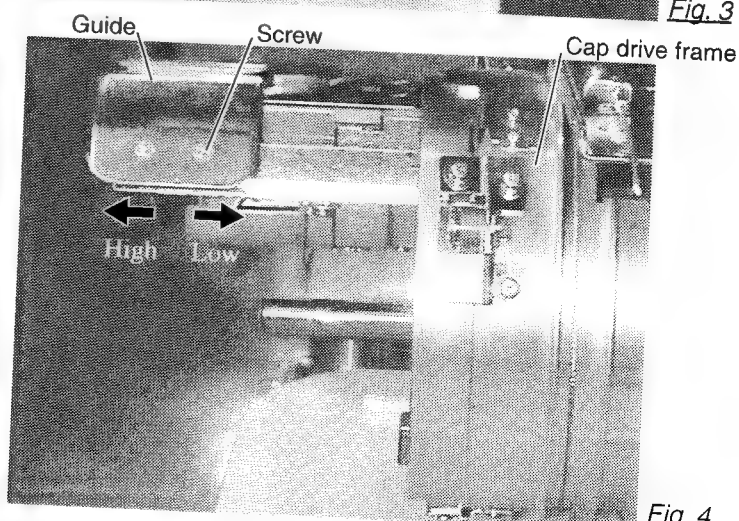


Fig. 4

CAP FRAME (OPTION)

7-9

Hooping caps

1. Place cap stretcher securely on sturdy work bench.
2. As shown in Fig. 1, hold cap hold frame with both hands and place on cap stretcher. By pushing hold lever at 3 places in arrow marks with fingers, place cap hold frame so that center guide of cap stretcher gets in concave of upper cap hold frame.

Confirm that cap holder frame is securely placed on cap stretcher without gap.

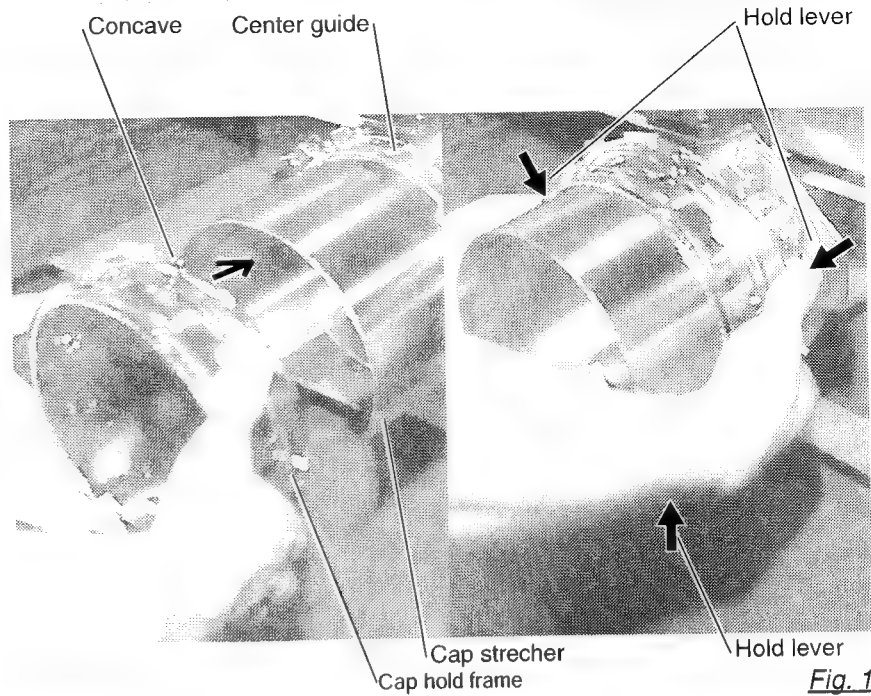


Fig. 1

3. As shown in Fig. 2, remove cap grip and keep open to the left.
4. Extend fore half of liner inside cap toward outward and place on cap stretcher. At this moment, place it so that tip of liner contacts flange of cap hold frame.

Please place one or two sheets of nonwoven fabric (backing) of standard thickness under unstructured caps.
The length of nonwoven fabric should be some as one of round of cap.

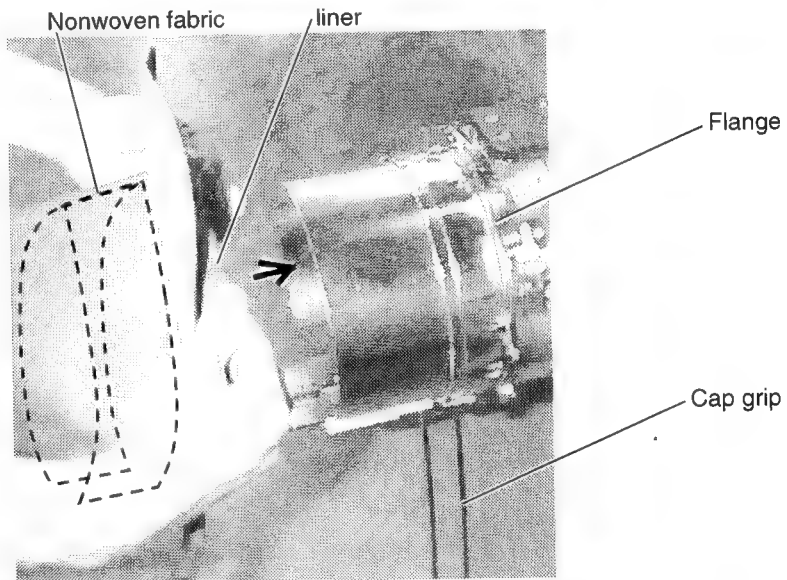


Fig. 2

5. As shown in Fig. 3, place hook so as to have visor of cap get in gap between cap grips. At this moment, set center of cap to center mark on cap hold frame so that notched portion of clamp gets into seam of visor. Close hook.

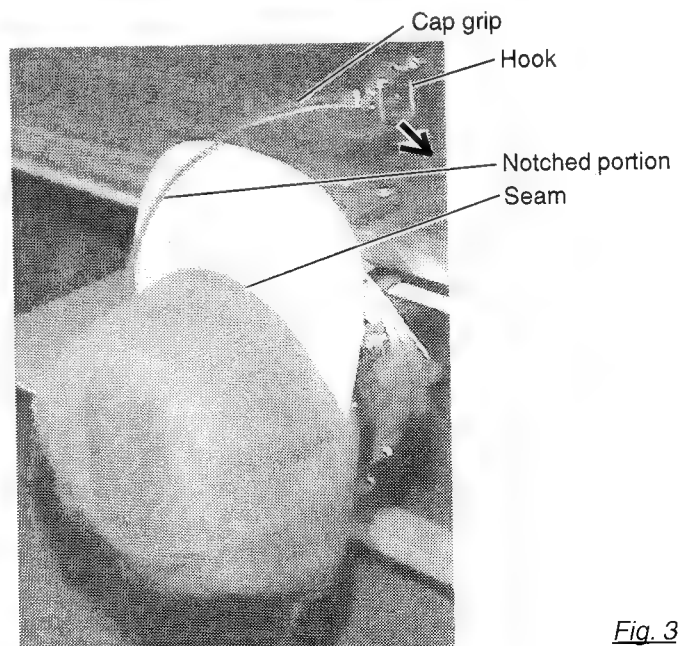


Fig. 3

CAP FRAME (OPTION)

7-A

6. As shown in Fig. 4, lift cap stretcher to tip forward. Hold cap with clips at two places in back by stretching crease toward arrow marked direction from front of the cap.
At this time, hold nonwoven fabric under clothing fabric with clips together.

Get lever for clip facing toward inside.

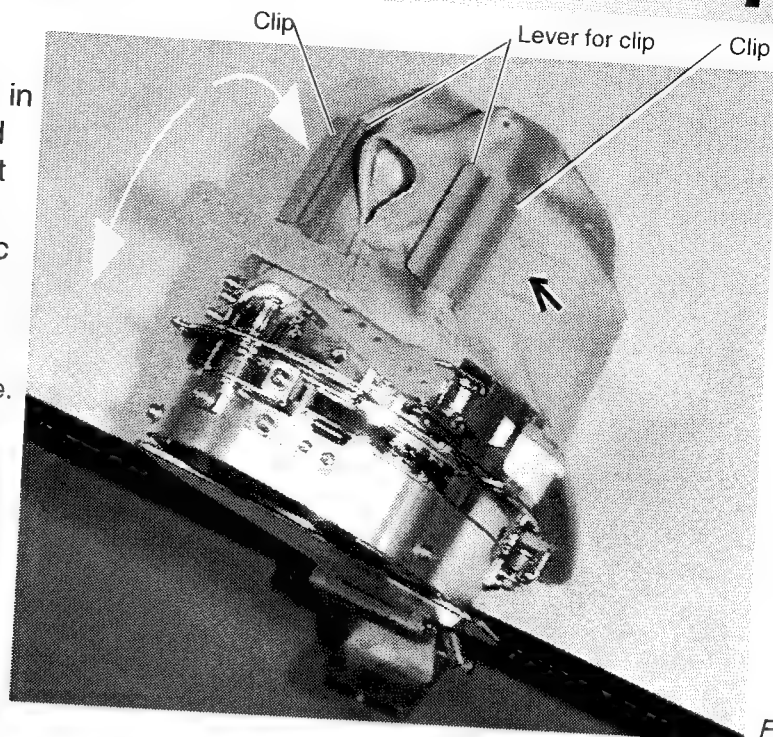


Fig. 1

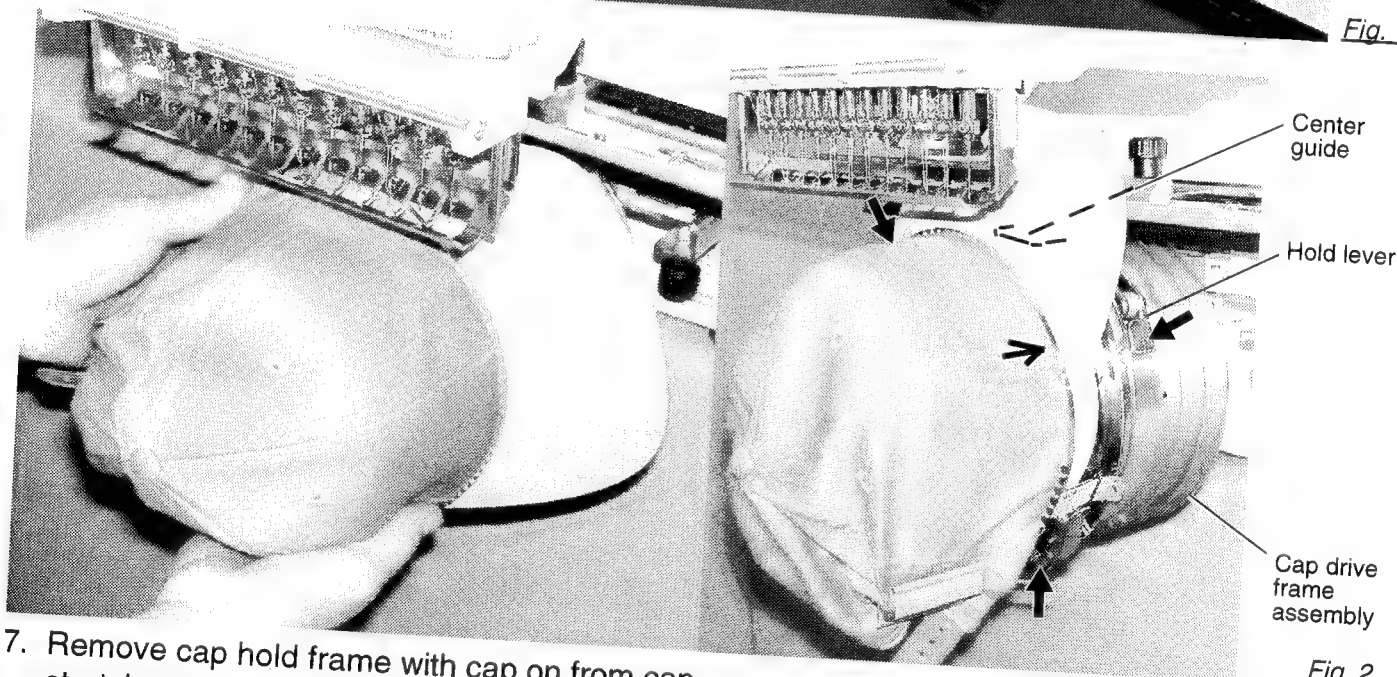


Fig. 2

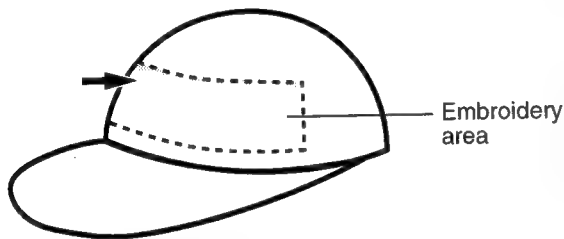
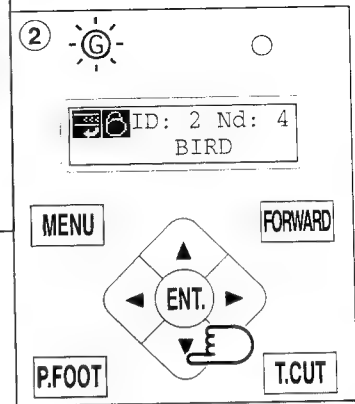
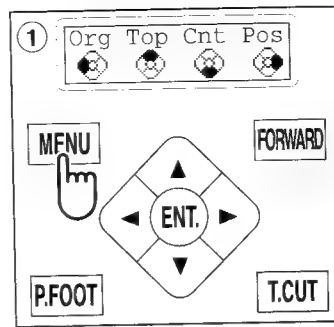
7. Remove cap hold frame with cap on from cap stretcher.
8. As shown in Fig. 5, place cap hold frame with cap on cap drive frame assembly of embroidery machine.
By pushing holder lever at 3 places in arrow marks with fingers, place cap hold frame with cap on so that center guide of drive frame assembly gets in concave of upper cap hold frame.
Confirm that cap holder frame is firmly placed on cap drive frame assembly without gap.
In case there is gap between cap hold frame and cap drive frame or hold lever doesn't go into hole on cap hold frame well, loosen set screw on hold lever to adjust.

CAP FRAME (OPTION)

7-B

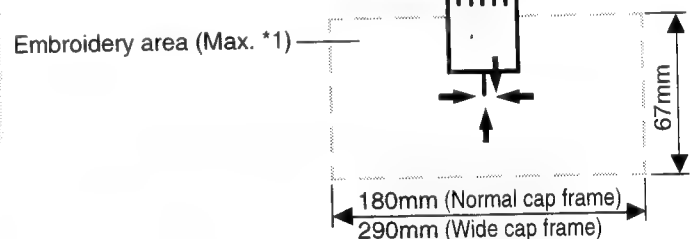
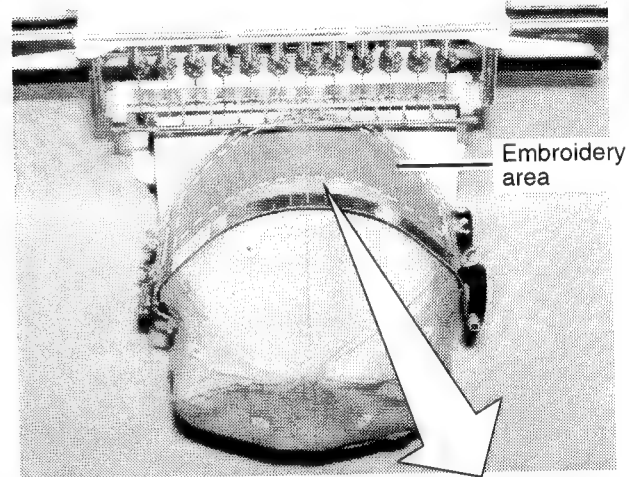
● Starting to sew

1. If you press and hold the menu button for a few second, you will see the direct frame movement menu if the machine is stopped.
2. Press the "Down" arrow button.
Embroidery frame moves to the center of embroidery area automatically.



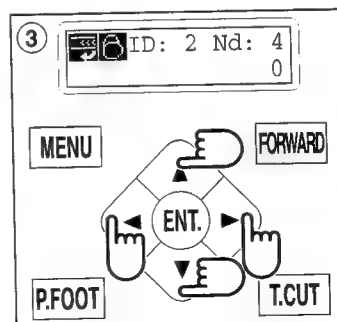
There is a case that the upper part of the cap cannot be embroidered satisfactory depending on shape of a cap.
We recommend to change design position or reducing size of the design.
Refer to the instruction book of "Happy link" to reduce the size of the design.

*1 Actual embroidery area will be restricted in accordance with design and shape of a cap.

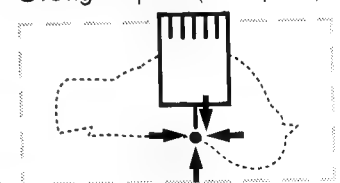


3. Press the arrow buttons (up, down, left, right) and move the embroidering frame position to the origin point of the pattern (usually the center).

Once the cap drive is installed, the design automatically rotates upside down for cap sewing.

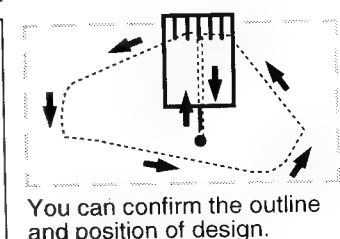
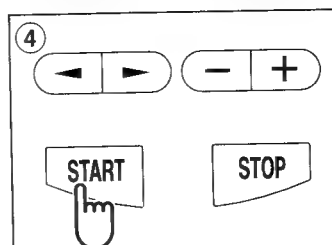


●:Original point (Start point)



4. Press the "START" button.

The embroidering frame moves for the design trace. 5-3
Make sure that the pressure foot or needle does not hit the frame.
If you push and hold the start button, the machine will discontinue the trace and move to the first stitch point.

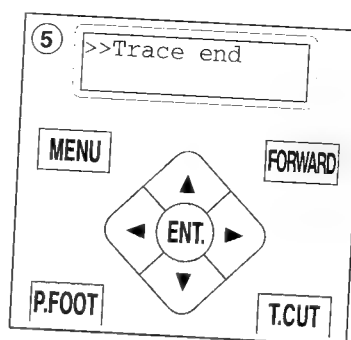


CAP FRAME (OPTION)

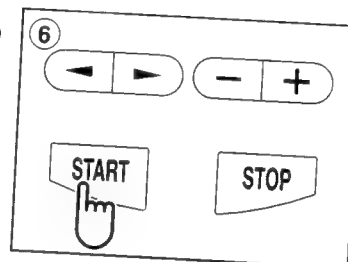
7-C

5. The display will show ">>Trace end" and the embroidery frame will stop moving.

The embroidering frame has moved to the first stitch point of the pattern.

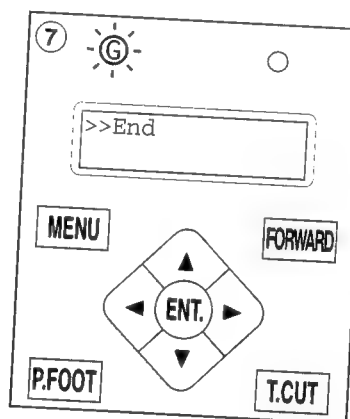


6. If you are satisfied that the design will fit into the hoop by viewing the trace, Press the "START" button again to begin sewing.

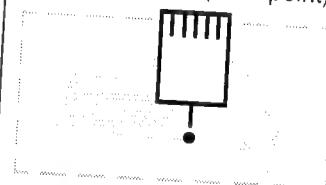


7. After finishing your design, the display will show ">>End" and the machine will stop.

The embroidery frame returns to the origin point automatically.



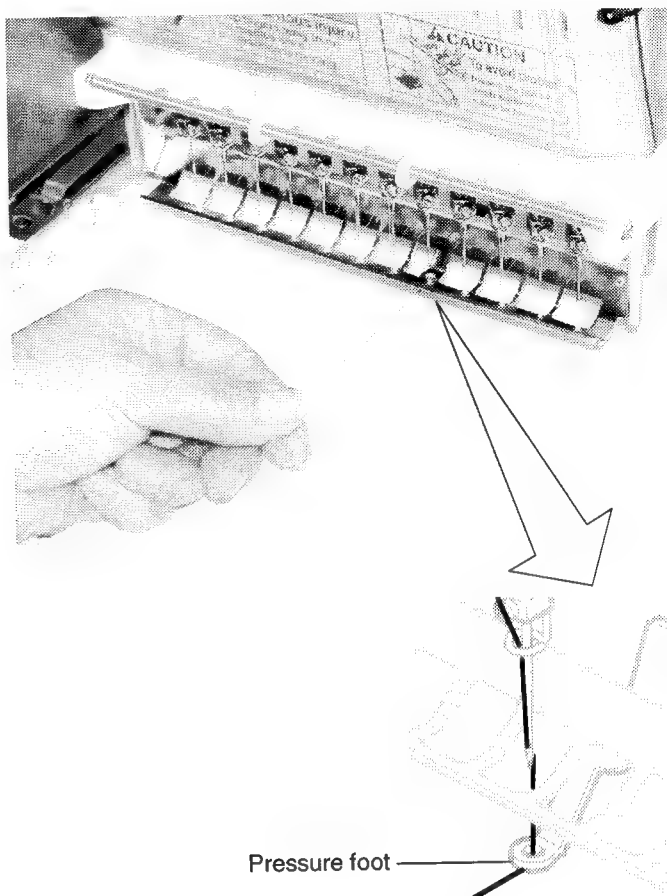
●:Original point (Start point)



ADJUSTING THE THREAD TENSIONS

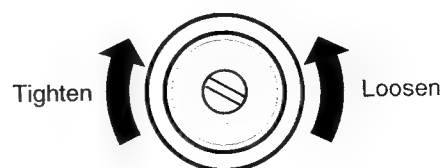
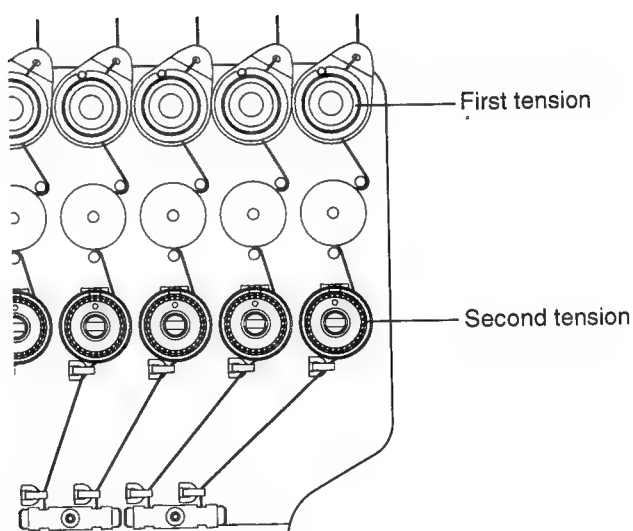
8-1

1. With the thread going through the hole of the pressure foot, pull it out slowly toward the front.



2. Adjust the Minor thread tension by the first tension knob and then the second Thread tension knob.

According to the type of upper thread and cloth.



●What to do if the thread breaks while sewing

In case thread breaks and thread shorts while sewing. The machine senses a thread break and the frame moves back several stitches from the broken point and the machine stops.

(This function is to prevent open sections in the design when you start sewing again. See Thread break backup. P5-2)

If the upper thread breaks

Thread upper thread again.

(Reference to thread upper thread P4-6)

In case bobbin thread breaks

Thread lower thread again.

(See preparation of bobbin winding. P4-5)

●Stopping and resuming sewing

If you wish to turn off the machine power while sewing, you may re-start sewing from the suspended point after turning on the machine power again and then re-starting.

■ You need carefulness that suspending machine with sewing of pattern data half done left and when some time pass and re-start sewing, cloth crease may occurs, there might be gap between sewing part which you add after stopping machine and re-start sewing and it's cloth crease by sewing.

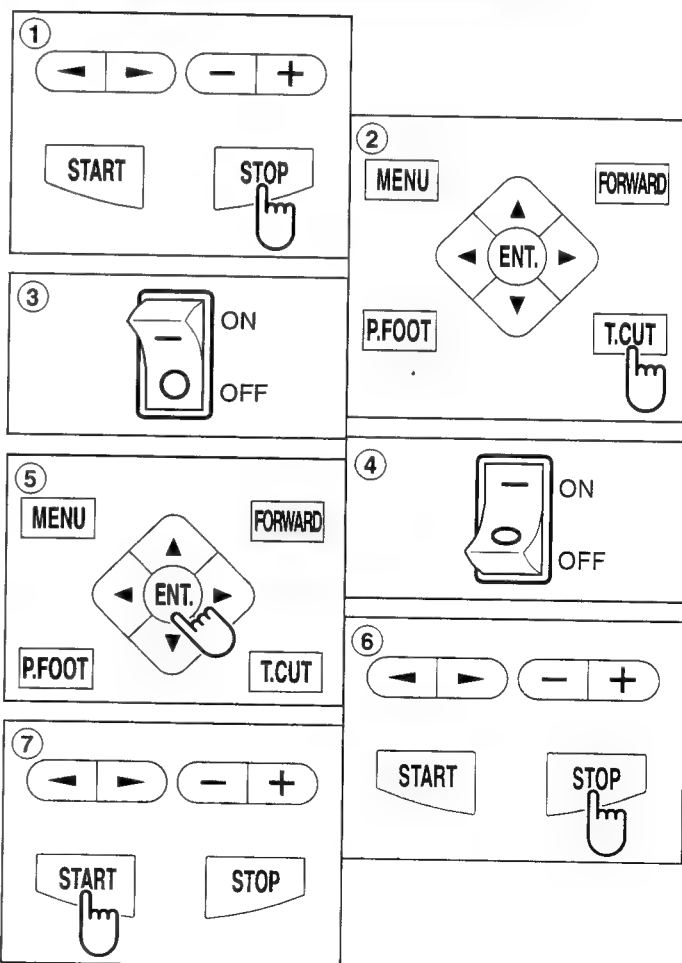
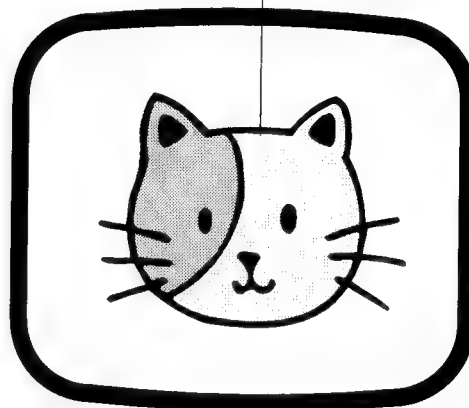
To suspend sewing

1. Stop the sewing by pressing the "STOP" button.
2. Press the "Thread trim" button.
3. Turn off the power switch.

To start embroider again from half point of design

4. Turn on the power switch.
5. Press the "ENT." button.
The carriage and frame will move to the front side and the right automatically and then will return to the original point.
6. Back up several stitches from the stopped point by pressing the stop button 3-4 times.
7. Start sewing again by pressing the "START" button.

As an example; An unsatisfactory gap between blocks and block. Because stopped machine at half point of embroidery and shrunk material.



CAUTION: To prevent accidents.
When performing a thread trim, be careful of the needle which will enter the fabric.

CAUTION: To prevent accidents.
When turning power on, the embroidery frame will make a sudden move to the front and right side. Please keep your hands and body from contacting the machine.

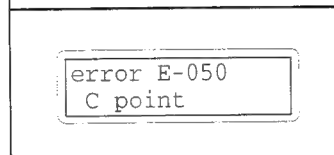
● Loss of power while embroidering

If you had a power failure while embroidering, follow these instructions and you can restore the position of the frame and pattern data its state before the power failure.

1. Turn on the power switch.



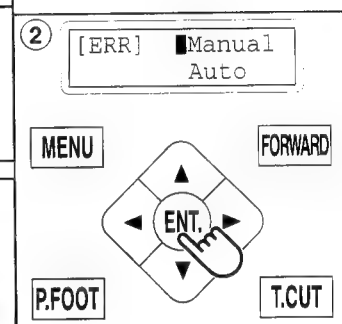
2. Press the "ENT." button.



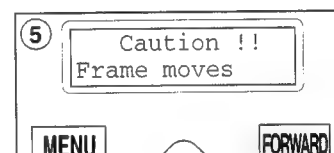
3. Press the "Down" arrow button until the cursor points to "Auto".



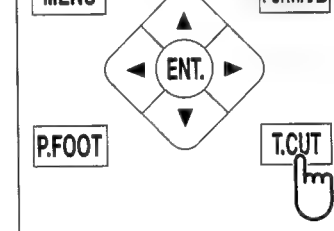
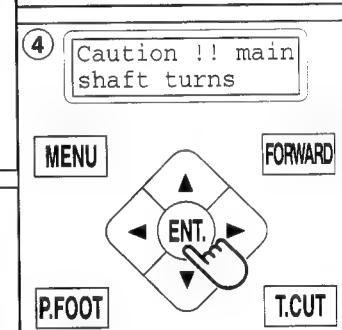
4. Press the "ENT." button.
The main shaft will make one rotation and stop at the "C" point (proper stop position).



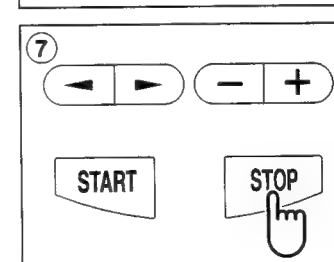
5. Press the "Thread trim" button.
The needle will go down and trim the thread.



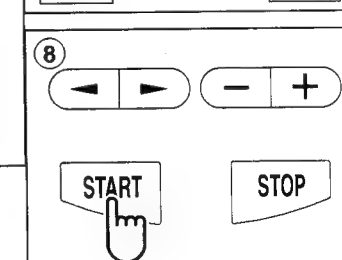
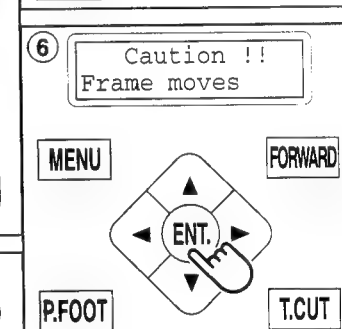
6. Press the "ENT." button.
The carriage and frame move to the front and right side automatically and then return to the original point.



7. Back up several stitches from the stopped point by pressing the stop button 3-4 times.



8. Start sewing again by pressing the "START" button.



CAUTION: To prevent accidents.
When performing a thread trim, be careful of the needle which will enter the fabric.



CAUTION: To prevent accidents.
The frame moves quickly.
Keep your hands away from the frame.



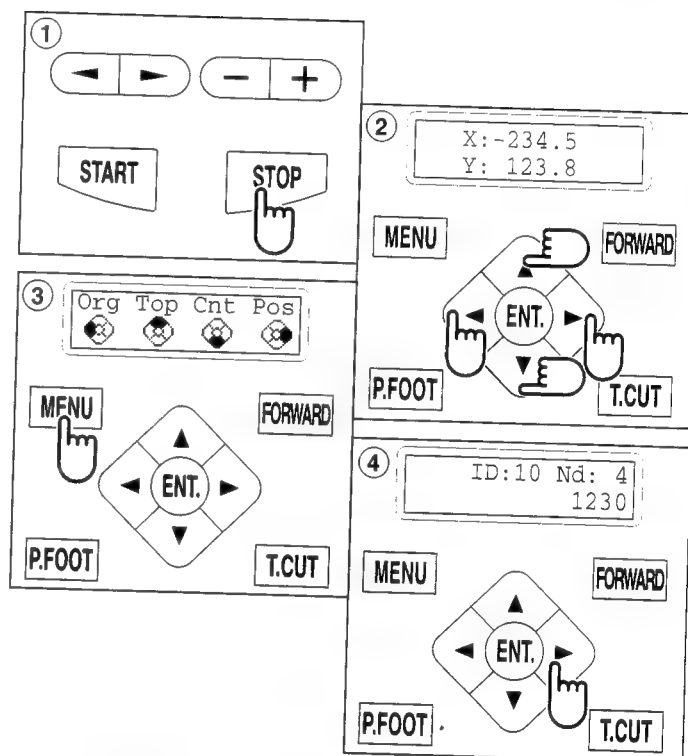
CAUTION: To prevent accidents.
The frame moves quickly.
Keep hands away from the frame.

● Moving the hoop while embroidering then returning to the correct location (Position)

If you wish to move the embroidery frame at a midpoint of the design, follow these steps.

1. Stop the sewing by pressing the "STOP" button.
2. Press an "Arrow" button (up, down, left, right) to move the embroidery hoop.
3. If you press the "MENU" for few second, you will see the direct frame movement menu.
4. Press the "Right" arrow button.

The frame will automatically return to the correct position before it was moved.
And you return to drive mode.



● Moving to the beginning position (Origin)

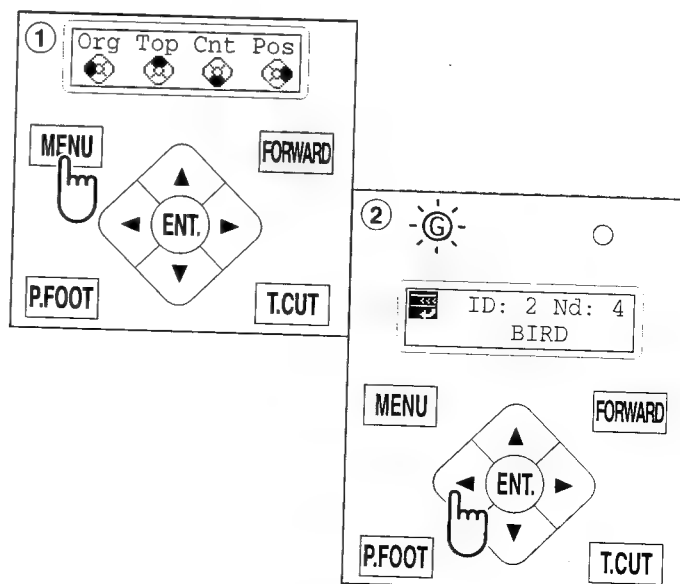
The frame returns to the origin point (beginning position of design).

1. If you press and hold the "MENU" button for a few seconds, you will see the direct frame movement menu when the machine is stopped.
2. Press the "Left" arrow button.

The frame will move to the origin point and the data will be at the same point.

(Top) will be indicated on the panel.
You will then return to the drive mode.

If you want to get back to the previous status from the origin point, do #1 and #2 above again.

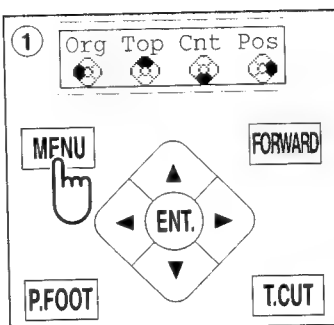


●Going back to the start of design data (Top)

To stop sewing at a midpoint, change the design location in the hoop, then restart from the beginning.

If you use the menu item "Top", you can make the pattern data only return to the start point with the frame position left where it is.

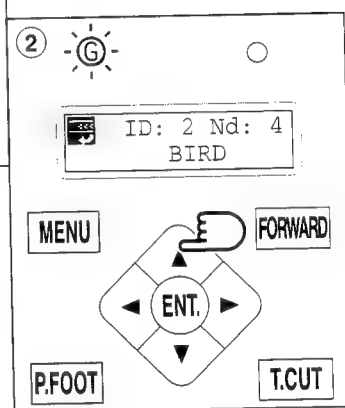
1. If you press and hold the "MENU" button for a few seconds, you will see the direct frame movement menu.



2. Press the "Up" arrow button.

The design data will return to the beginning point of the pattern data.
The display returns to drive mode, and the drive lamp is green.

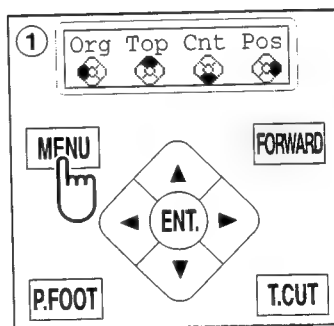
If you want to get back to the previous status from "Top". Do procedure #1, and #2 again.



●Placing the design in the center of the selected embroidery frame (Center)


Move embroidery frame position to the center automatically.

1. If you press the "MENU" button for a few seconds, you will see the direct frame movement menu.

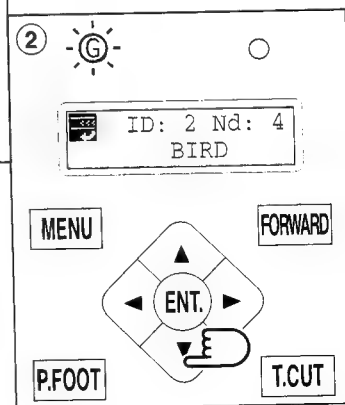


2. Press the "Down" arrow button.

The embroidery frame will move to the center automatically, and the pattern data will return to the start point.

 (Top) will be indicated on the panel.
The display returns to the drive mode, and the drive lamp is green.

If you want to get back to the previous status from "Center". Do procedure #1 and #2 above again.



CAUTION: To prevent accidents.

The frame moves quickly.

Keep hands away from the frame.

● Rotating and mirroring designs (Convert)

Convert selected pattern data.

Setting example

● : Start point of pattern

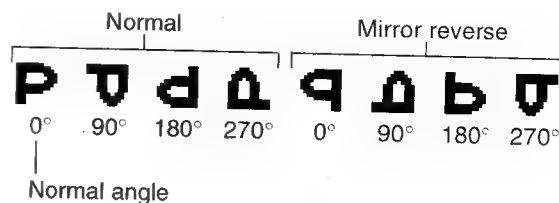


Normal



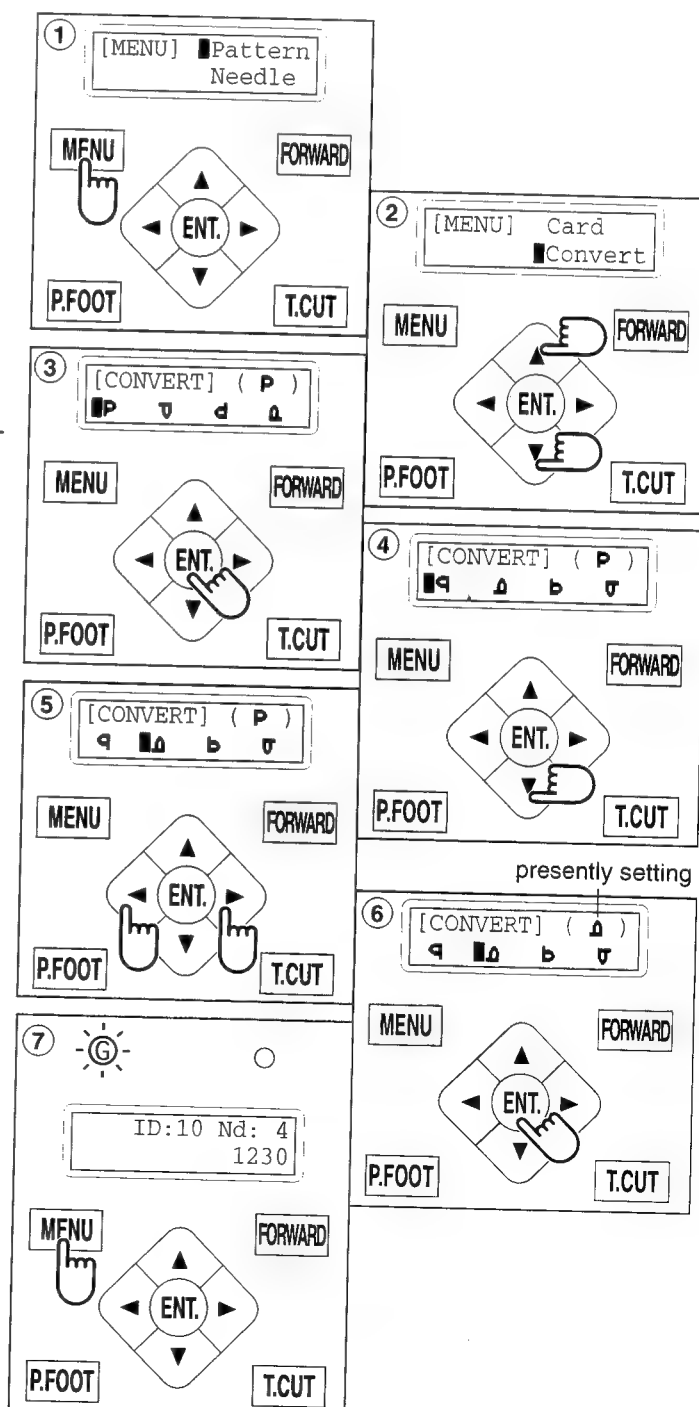
Mirror reverse + 90°

With start point of pattern as pivot, the machine changes pattern angle in 90 degree increments through reversed.



1. Press the "MENU" button until [MENU] is shown when the machine is stopped.
2. Press the "Up" or "Down" arrow button until the cursor points to "Convert".
3. Press the "ENT." button when showing [CONVERT].
The control box displays standard pattern adjustment.
4. Press the down "Arrow" button.
The control box displays mirror reverse.
5. Press the "Left" or "Right" arrow button, to select which you would like.
6. Press the "ENT." button.
The current setting changes to the desired setting.
7. Finally, Press "MENU" button until the green lamp on control box is lit.

You can start embroidering.

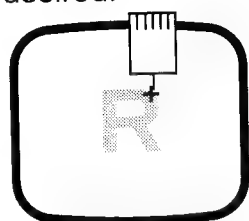


● Starting from a midpoint of a design (F.Posi)

This function allows you to go directly to a stitch number or a color change and positions the hoop correctly.

Stitch (Number of stitches)

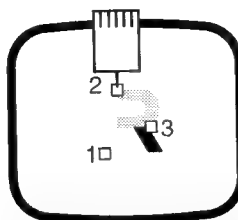
This moves the frame to any stitch number desired.



+ : Any stitches

Change (Color position)

This moves the frame to the beginning of any color number.



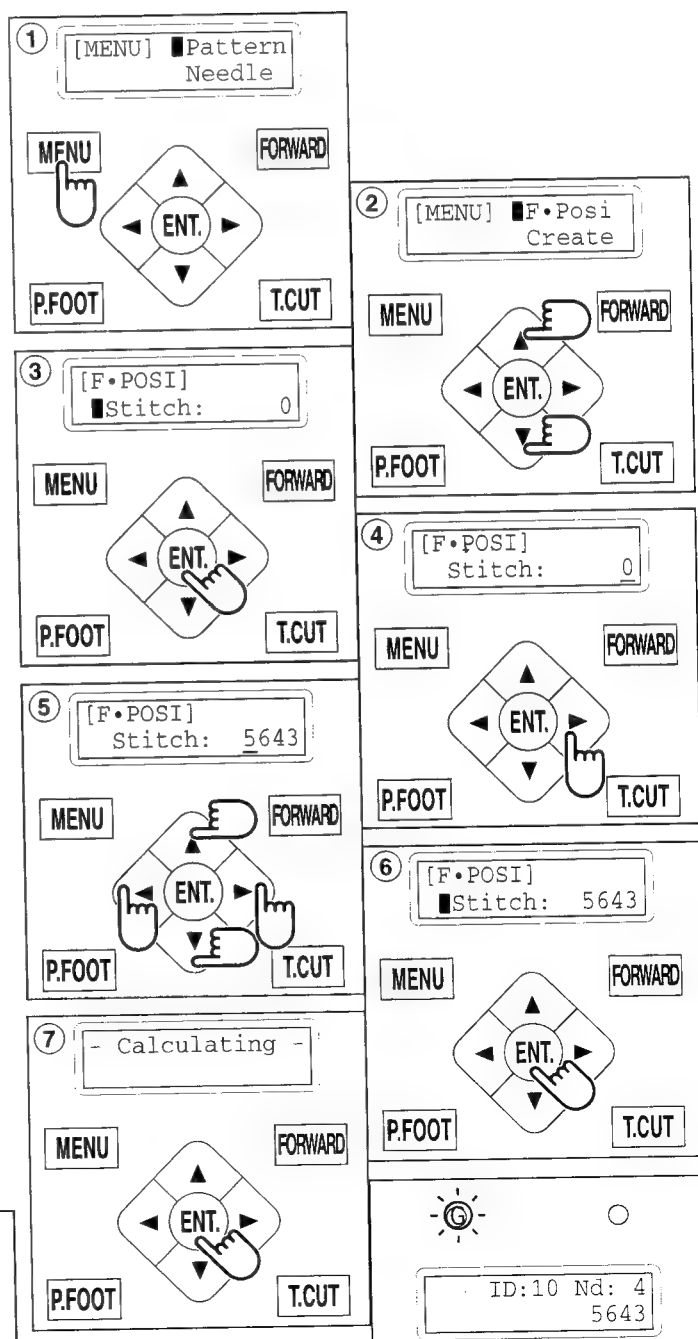
□ : Beginning of any couloir number

Stitch

1. Press the "MENU" button until [MENU] is shown when the machine is stopped.
2. Press the "Up" or "Down" arrow button until the cursor points to "F •Posi".
3. Press the "ENT." button when showing [F•POS].
4. Press "Right" arrow button.
The cursor will move to be under the needle number.
5. Pressing the "Left" or "Right" arrow button, moves the cursor to select which number to change.
Press the "Up" or "Down" arrow button to set each number to the needed stitch number.
The number will increase by pressing the "Up" arrow button.
The number will decrease by pressing the "Down" arrow button.
6. Press the "ENT." button.
The cursor will return to the left side.
7. Press the "ENT." button.
After the controller displays "- Calculating -", the frame will move to the selected stitch number position.



CAUTION: To prevent accidents.
The frame moves quickly.
Keep your hands away from the frame.



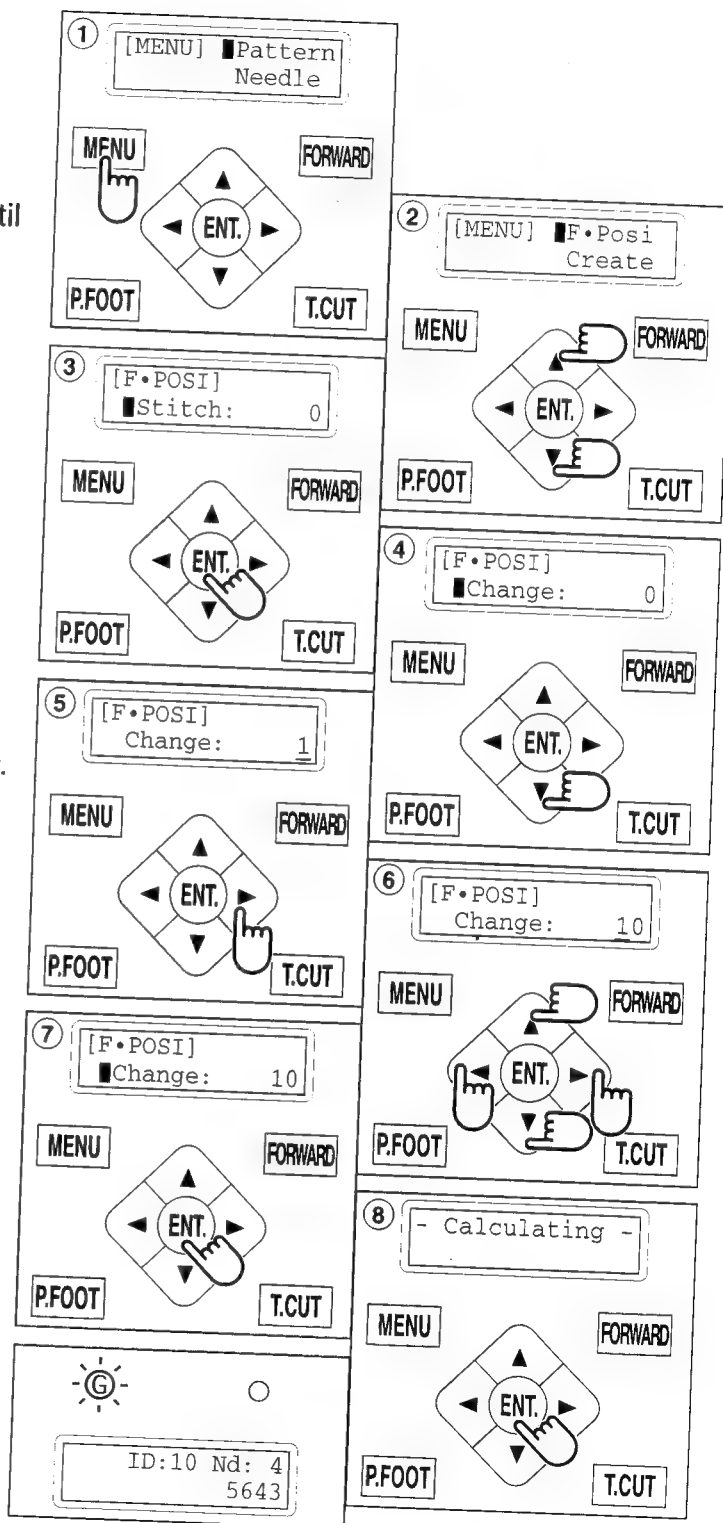
SEWING

Change

Starting from a midpoint in the design by color No.

9-7

1. Press the "MENU" button until [MENU] is shown when machine is stopped.
2. Press the "Up" or "Down" arrow button until the cursor points to "F •Posi".
3. Press the "ENT." button when showing [F •Posi].
4. Press the "Down" arrow button until the cursor points to "Change".
5. Press the "Right" arrow button.
The cursor moves to be under the color number.
6. Pressing the "Left" or "Right" arrow button, moves the cursor to the selected number. Press the "Up" or "Down" arrow button to set the number.
The number will increase by pressing the "Up" arrow button.
The number will decrease by pressing the "Down" arrow button.
7. Press the "ENT." button.
The cursor will return to the left side of the display.
8. Press the "ENT." button.
After the controller displays "- Calculating -", the frame moves to the selected color position.



CAUTION: To prevent accidents.
The frame moves quickly.
Keep hands away from the frame.

● Specifications

Voltage	1 phase 100V ~ 120V -10% ~ +5%	1 phase 200V ~ 230V -10% ~ +10%
Electricity consumption	220 Wh	220 Wh
Frequency	50 / 60Hz	
Environmental condition	Temperature 0 ~ 40° C Moisture 45 ~ 85 %	
Dimension (Width x Height x Depth)	546 mm x 734 mm x 745 mm, 21.5" x 29" x 29.3"	
Weight	40 Kg	
Embroidery area (Y x X)	Tubular frame (Sew field of PAT-32320) 285 mm x 290 mm, 11.2" x 11.4" Max.*1 Normal cap frame (Option) 67 mm x 180 mm, 2.6" x 7" Max.*2 Wide cap frame (Option) 67 mm x 290 mm, 2.6" x 11.4" Max.*2	
Memory capacity	250,000 stitches	
Registered pattern	99 pat.	

*1 Actual embroidery area will be restricted in accordance with inner frame size.

*2 Actual embroidery area will be restricted in accordance with shape of a cap.

■ Specifications are subject to change without notice.


● Oiling



CAUTION: To prevent accidents.

When taking care of the machine, be sure to remove the plug.

The machine will advise you that lubrication is necessary on the basis of stitch number.

When it is turned on, the machine will display an icon and letter to indicate that lubrication is necessary.  3-4



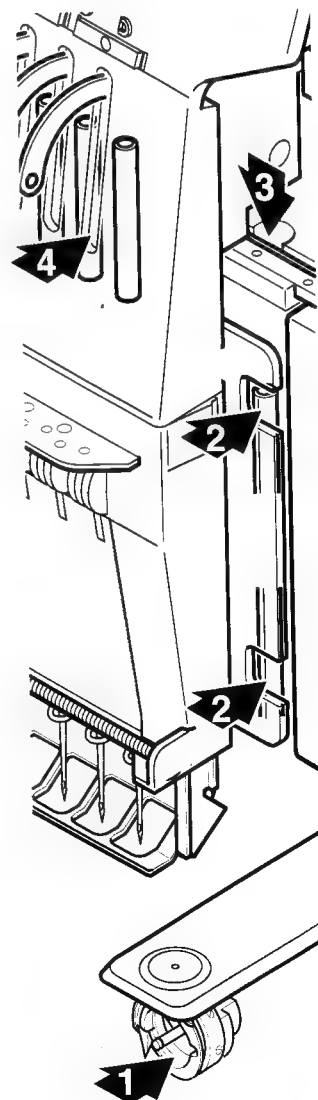
Please lubricate the specified oil locations according to the instructions below.

Running the machine without proper oiling will damage the machine. Lint will gather in and around the rotary hook. Rotary hooks then wear which will cause the threads to break. Please clean lint with a brush and run the machine idly for 2 ~ 3 minutes.

Mark	No.	Place to oil	Specified oil
A	1	Rotary hook (Lubricate with oil slightly with a small brush and sewing machine oil between the outer and inner rotary hook parts.)	Sewing machine oil
B	2	Pressure foot guide bar	
	3	Head shaft	
	4	Needle bar	

■ When oiling the pressure foot guide bar, please move the head to the left and set it to needle No. 1.

■ Too much oil may stain fabrics and threads.

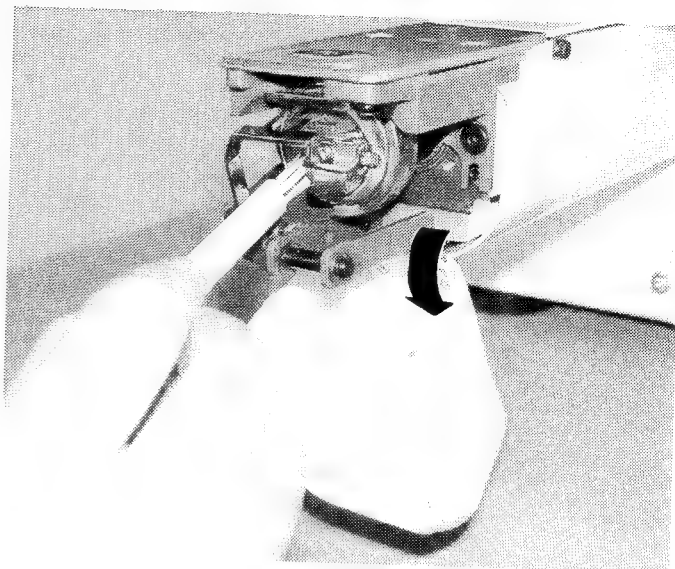




CAUTION: To prevent accidents.
When taking care of the machine, be sure to remove the plug.

●Cleaning of rotary hook

If the rotary hook is clogged with waste thread or dust, it will worsen the stitch quality of the embroidery or may cause other problems. For a long sewing life, please keep the rotary hook clean. Use the included brush for cleaning the hook.

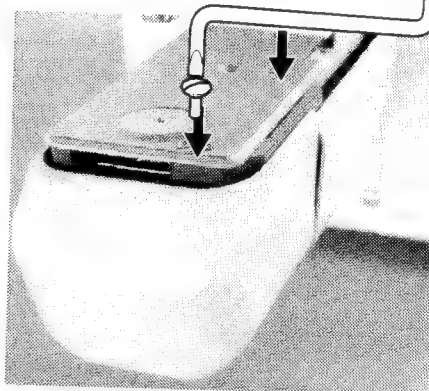


●Cleaning of thread cutting knife

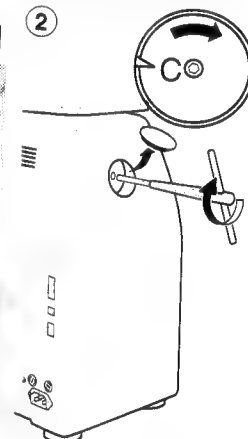
If the thread cutting knife is clogged with waste thread or dust, the knife will not work correctly. Please keep the thread cutting knife and device clean.

1. Remove set screw (2 pieces) by offset driver and remove the needle plate.
2. Turn the main shaft toward the arrow mark until the gauge points to the "C" point by using the 3 mm hexagonal driver.
3. Insert manual lever and pull down the manual lever that is in the left hand side of the machine as you face it.
4. Keep pressing the manual lever and turn the main shaft toward the arrow mark until it points to the "L" point.
5. Remove any waste thread and dust from the thread cutting knife and surrounding area.
6. Adjust the main shaft until the gauge points to the "C" point.
Thread cutting knife returns to the original position.
7. Remove manual lever and put the needle plate back on the bed and attach it with the screws (2 pieces).
Please do not keep manual lever to knob.
Please take care of manual lever.

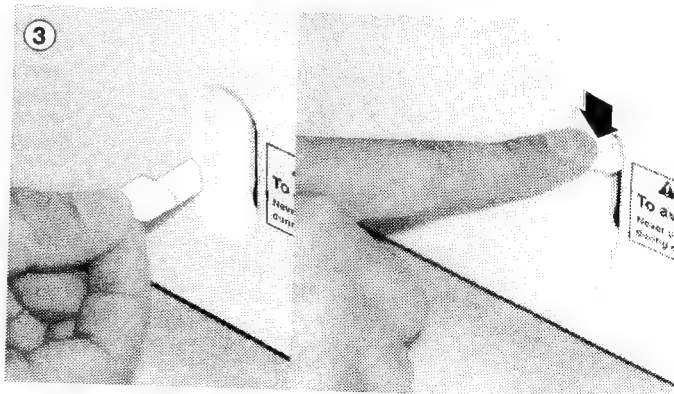
①



②



③



④



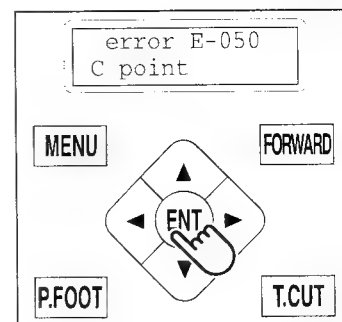
CAUTION: To avoid problems.
Never press the manual lever while the machine is running.

If something unusual happens to the machine when running it, please refer to the following table for troubleshooting solutions. Press the "ENT." button on the controller to release any error and correct it according to the list below.

When errors occur frequently, please contact your dealer.

Automatic errors backup

The machine recovers from some errors (E-018, E-050, E-193) automatically after detecting the error(s) by it self. When the machine does not recover from the error automatically, Please follow the "Solutions" below according to the shown number.



CAUTION: To prevent accidents.

In case of "Automatic errors backup", the machine's sudden movement might be caused without showing errors or messages after its stoppage.

No.	Display	Error	Solutions	Page
001	Circuit board	Abnormality was detected in control circuit board.	Turn off power source and turn it on again.	
004	System memory	System memory is out of order		
015	Inverter trip	Sewing motor related trouble Over-load on sewing motor, short circuit, trouble of motor drive unit	Cut power and turn main shaft with hand. If no abnormality is found, turn on again. Fig. 2	
018	Main shaft	Main shaft doesn't turn	Make sure if main shaft or drives are normal. Initialize the machine system and the machine speed.	11-1 11-2
020	Needle detect	Needle position is not detected. Needle bar selection unit is off its stop position. Trouble of position detecting circuit board	Turn needle bar selection knob to the fixed position (Marked area). Fig. 1	
021 022	Needle move	Motor for needle bar selection unit stopped halfway. No movement owing to malfunction of thread take-up lever or trouble of position detecting circuit board.	After fixing malfunction of needle and thread take-up lever, turn needle bar selection knob to the fixed position (Marked area). Fig. 1	
024	Needle center	Needle bar stop position is off center. Needle bar stop position is out of place.	Turn needle bar selection knob to the fixed position (Marked area). Fig. 1	
025	Needle over	Needle number not existing in the machine was specified.		
026	Needle differ	Needle number at time of finish and start of operation differs. It was changed to correct one.		
030	Slow mismatch	Improper speed adjustment at low speed. Speed doesn't decrease below 100rpm at low speed.	Initialize the machine system and the machine speed.	11-1 11-2
050	C point	Stop position of main shaft is out of its plac	See Fig. 2 below.	10-6

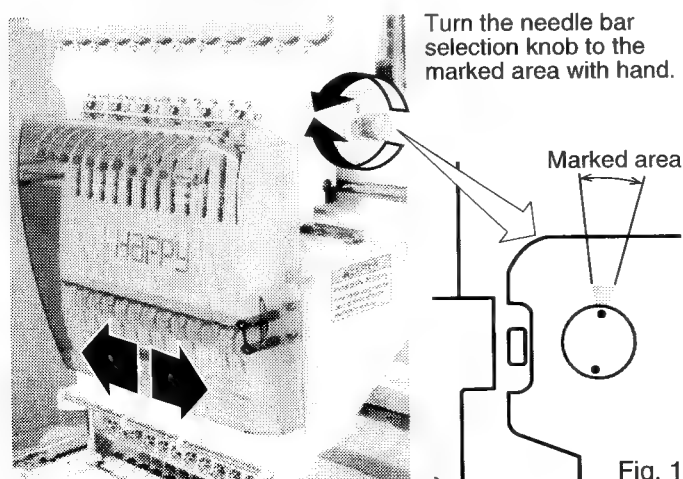


Fig. 1

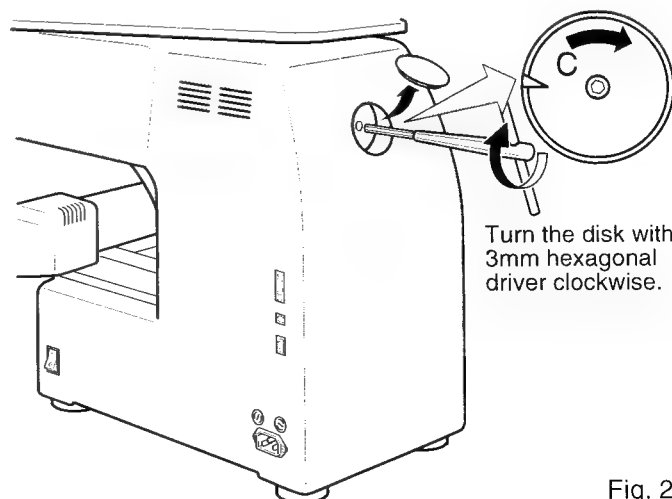


Fig. 2

ERRORS AND WHAT TO DO

10-4

No.	Display	Error	Solutions	Page
051	L sensor	Trouble of timing detecting board, dirty photo sensor [PH2](L.P.) Malfunction of "Lowest needle position" sensor on detecting circuit board. Improper adjustment of slit plate.	Photo sensor is dirty or the slit plate contacts sensor. Initialize the machine system and the machine speed.	11-1 11-2
052	C sensor	Trouble of timing detecting board, stain of photo sensor [PH1](C.P.). Malfunction of "Color change position" sensor on timing detecting circuit board.		
055	Take-up cover	Take up lever cover is open.	Close the take up lever cover.	
060	X limit	Frame moved beyond sewing area side-ways.	Return frame within sewing area by use of the arrow button. Check pattern size and contents of settings.	
061	Y limit	Frame moved beyond sewing area length-wise.		
090	Miss reception	Error occurred during communication of data.	Read pattern data again from the beginning.	5-4
091	No send	Data did not sent in for over 10 seconds.		
103	Data format	The machine cannot automatically determine the format of the pattern data.	Check data format of pattern data. Set data format properly.	5-2
104	Miss function	Timing to read pattern data doesn't conform.	Read pattern data again from the beginning.	5-4
105	Dual function	One stitch has more than 2 functions.	Read pattern data again from the beginning.	5-4
108	Improper read	While reading pattern data, an error occurred.	Read pattern data again from the beginning.	5-4
110	Memory full	While reading a pattern, memory exceeded its capacity.	Delete unnecessary patterns and read from the outset.	10-1
111	Change over	While reading pattern data, the frequency of color change (color No.) exceeded 250 times.	Reduce frequency of color change of one pattern to less than 250 times.	
112	Data error	Pattern data of pattern to be embroidered is damaged.	Delete pattern and read pattern data again.	5-8
114	Id over	The number of patterns in memory has reached maximum of 99.	Delete unnecessary patterns and read again from the beginning.	5-8
118	Trace data over	Over 1024 stitches trace data were created during reading of pattern data.	Set maximum stitch length to Embroidery area of pattern data within 2m(length wise) x 2m(side wise).	5-2
120	Memory error	It became impossible to retain contents of memory.	If this condition occurs frequently, CPU circuit board is out of order. Contact your Dealer.	
130	Card error	Incapable of disposing of memory card continuously.	Turn off power source once and turn it on again. If not OK, contact your dealer.	
131	Card no ready	Memory card is not set.	Check if memory card is properly set.	5-5
133	Bad card	Memory card is not proper or broken.	Memory card cannot be read or broken memory card or memory card not initialized. Contact your Dealer.	5-5
141	Not found name	Designated pattern is not found.	Memory card is not correct.	5-5

ERRORS AND WHAT TO DO

10-5

No.	Display	Error	Solutions	Page
190	Cut blade	Thread cut knife is not at stop position.	Follow the instructions below.	10-7
193	Catcher	Thread catch hook is off its position Limit switch to detect position is not "OFF".	Please follow the exsample below. 1. Check if it does not cut thread. If thread is not cut, cut it and return the thread catch hook to its normal position. 2. If threads are cut, check if thread catch hook on head has returned to its position completely.	10-8

ERRORS AND WHAT TO DO

10-6

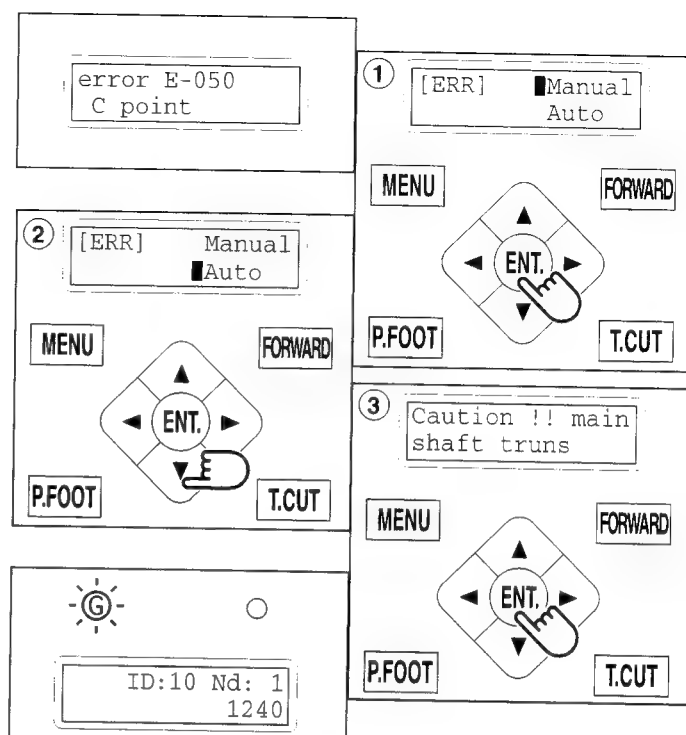
What to do for "Stop position of main shaft is out of its place (error E-050)"

1. Press the "ENT." button when showing [ERR].

2. Press the "Down" arrow button until the cursor points to "Auto".

3. Press the "ENT." button.

The main shaft turns 2 to 3 times and returns to a stop position ("C" point) automatically. The display returns to drive mode.



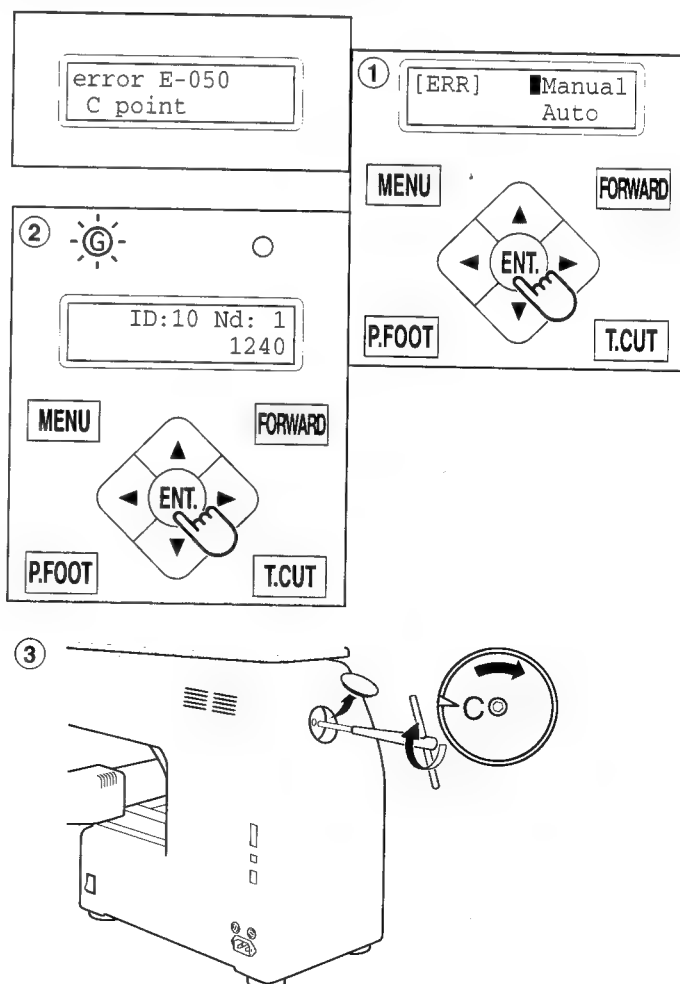
When you cannot clear by the method above (Auto)

1. Press the "ENT." button when showing [ERR].

2. Press the "ENT." button.

The error status is released and the display shows "drive mode".

3. Remove the cap over the small hole in the rear of the machine. Using the 3 mm hexagonal driver, Please turn the main shaft and adjust it to the "C" point.



ERRORS AND WHAT TO DO

10-7

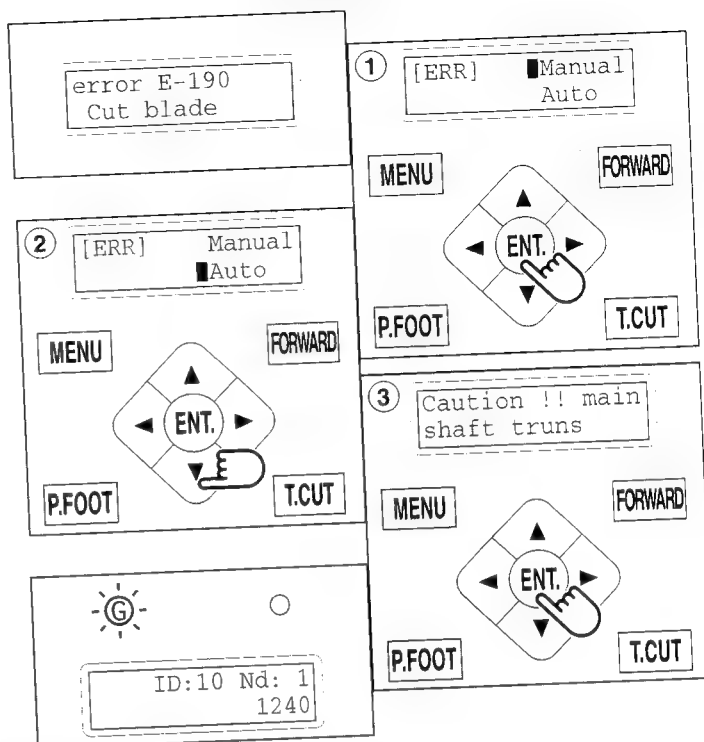
What to do for "Thread cut knife is not at the stop position (error E-190)"

1. Press the "ENT." button when showing [ERR].

2. Press the "Down" arrow button until the cursor points to "Auto".

3. Press the "ENT." button.

The main shaft turns 2 to 3 times and the thread cutting knife returns to the stop position.
The display returns to the drive mode.



When you cannot clear by the method above (Auto)

1. Press the "ENT." button when showing [ERR].

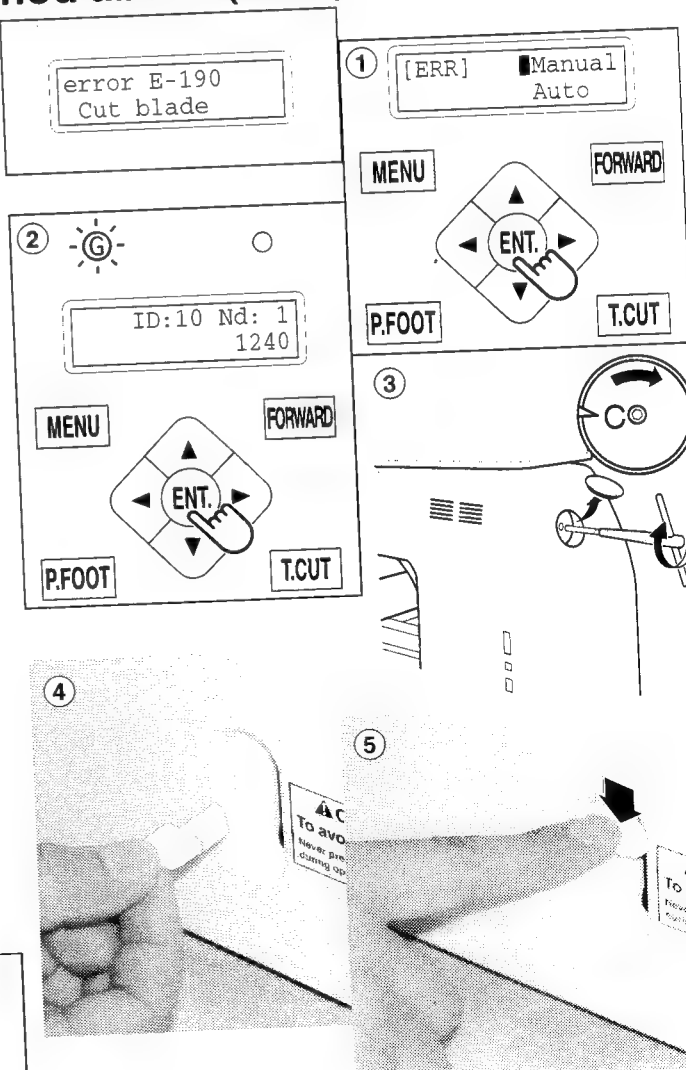
2. Press the "ENT." button.
The error status is released and the screen shows "drive mode".

3. Remove the cap over the small hole in the rear of the machine. Using the 3 mm hexagonal driver, Please turn the main shaft and adjust it to the "C" point.

4. Insert manual lever that is in the left hand side of the machine as you face it.

5. While pressing the manual lever, turn the main shaft a complete revolution and set it to the "C" point.
The knife will return to it's proper position.

6. Remove the manual lever.
Please do not keep manual lever to knob.
Please take care of manual lever.



CAUTION: To avoid problems.
Never press the manual lever while the machine is running.

ERRORS AND WHAT TO DO

10-8

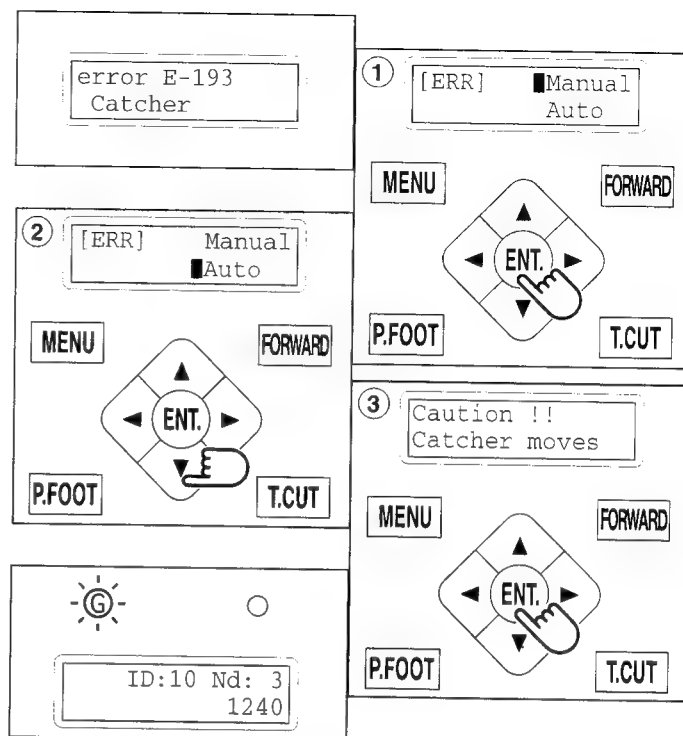
What to do for "Thread catch hook is off its position (error E-193)"

1. Press the "ENT." button when showing [ERR].

2. Press the "Down" arrow button until the cursor points to "Auto".

3. Press "ENT." button.

The thread catch hook returns to the original position.
The display returns to drive mode.



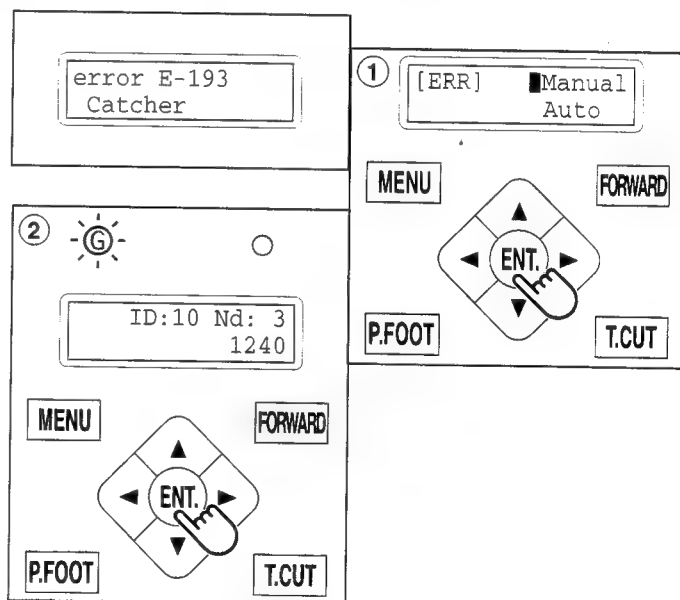
When you cannot clear by the method above (Auto)

1. Press the "ENT." button when showing [ERR].

2. Press the "ENT." button.

The Error status is cleared and the display shows "drive mode".

3. Refer to the page (ERRORS AND WHAT TO DO), locate the cause that the hook does not return to the original position, and follow the steps outlined. [P](#) 10-5



INITIALIZING MACHINE SETTINGS

11-1

If you have E-18, E-30, E-51 or E-52 while sewing, Please try initializing the machine settings. You will always need to initialize the machine speed when you initialize the settings.

Initialize of machine system

1. Press the "MENU" button until [MENU] is showing when the machine is stopped.
2. Press the "Up" or "Down" arrow button until the cursor points to "Other".
3. Press the "ENT." button when showing [OTHER].
4. Press the "ENT." button.
5. Press the "ENT." button.

Choose either "Cancel" or "OK".
6. Press the "Down" arrow button and move the cursor to "OK".

Press the "ENT." button to cancel.
The display will return to drive mode.

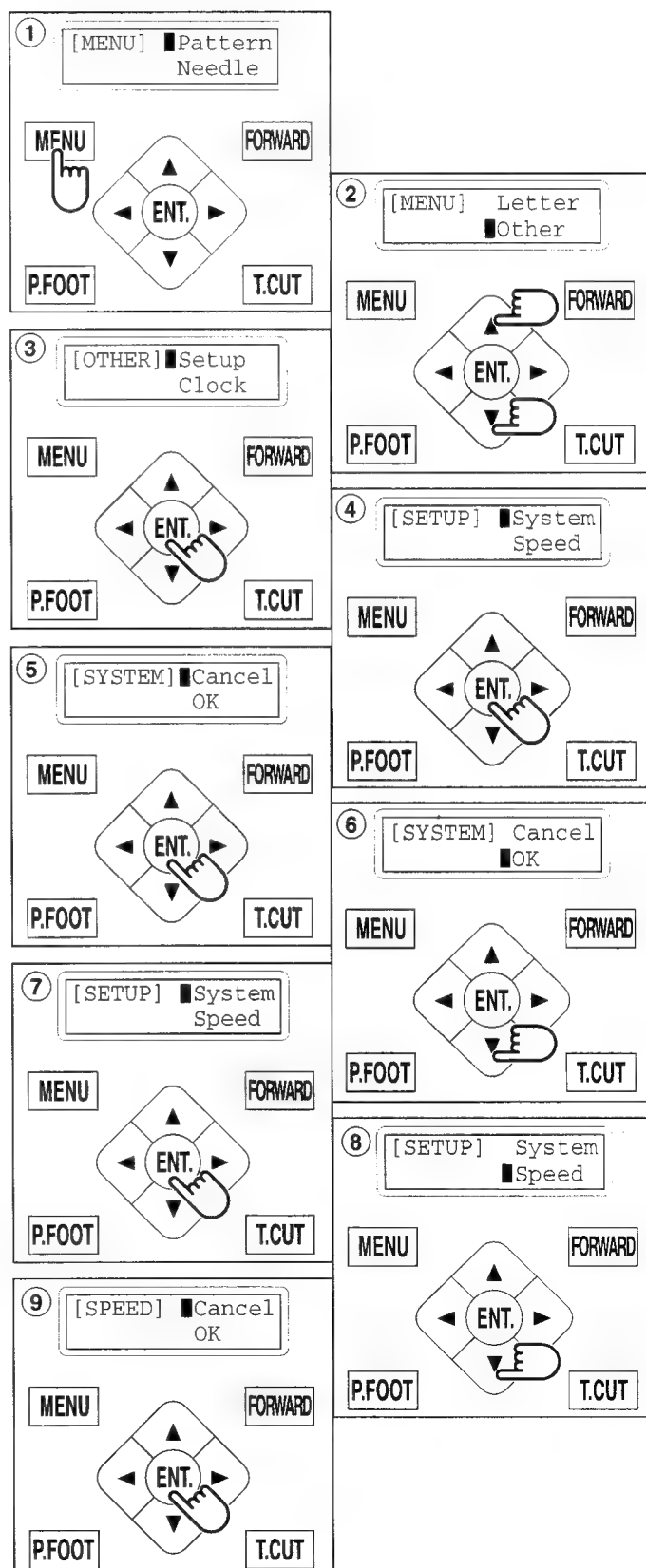
7. Press the "ENT." button.

Formatting of the machines systems are carried out.

Initializing of machine speed

8. Press the "Down" arrow button until the cursor points to "Speed".
9. Press the "ENT." button.

Choose either "Cancel" or "OK".



INITIALIZING OF MACHINE SETTINGS

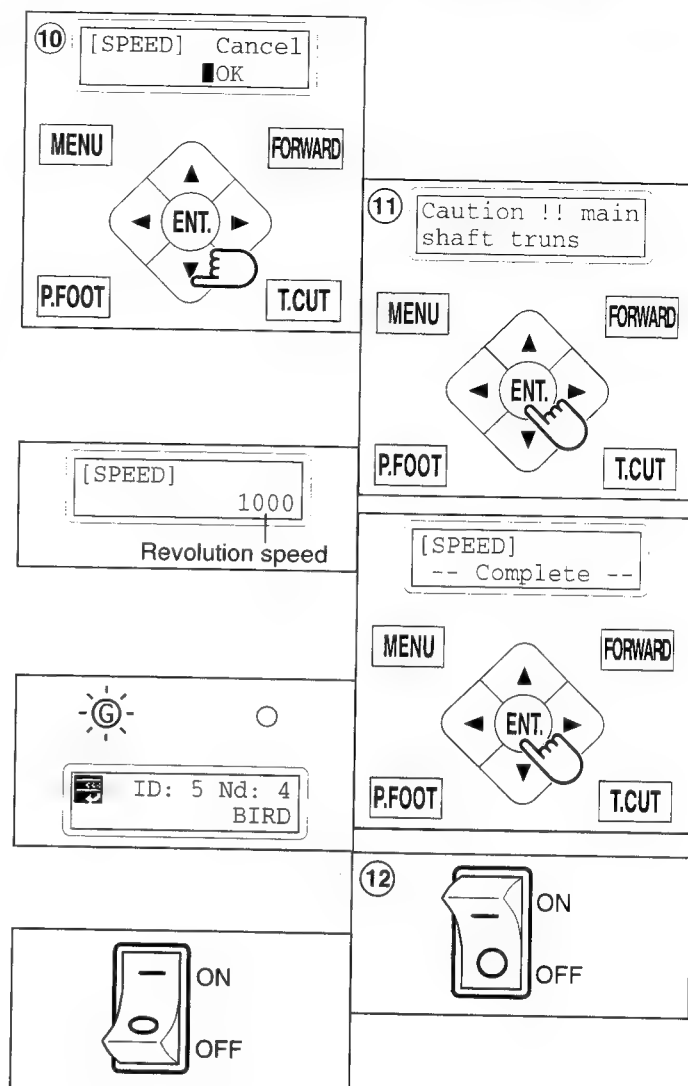
11-2

10. To initialize, press the "Down" arrow button and move cursor to "OK".

Press the "ENT." button to cancel.
The display returns to drive mode.

11. Press the "ENT." button.

The machine will show a notice then start turning the main shaft automatically and the speed will slowly increase.
The speed will increase to maximum and then stop automatically and indicate "-- Complete --".



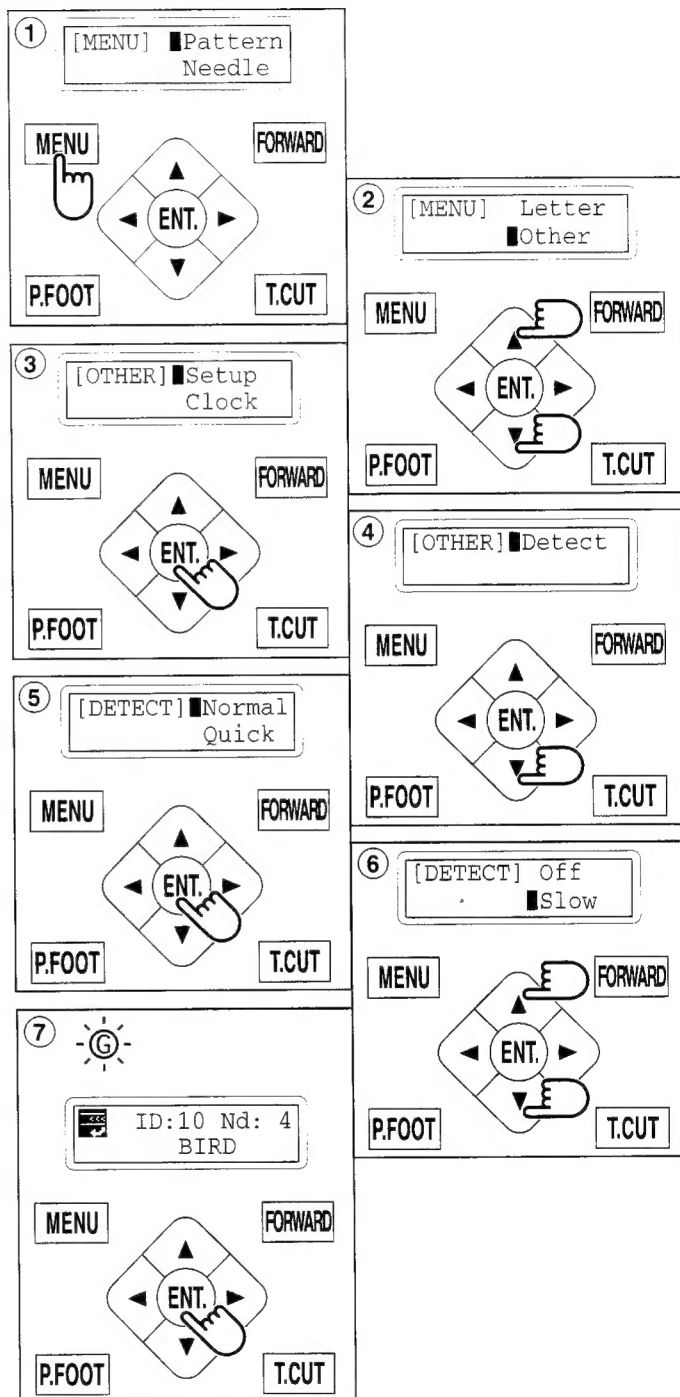
12. Turn off the power switch and turn on the power switch again.

CHANGE OF THREAD BREAK DETECTION

11-3

Sensitivity selection of the thread break detect sensor.
You can select the sensitivity.
By default it is set to "Normal".

1. Press the "MENU" button until [MENU] is showing when the machine is stopped.
 2. Press the "Up" or "Down" arrow button until the cursor points to "Other".
 3. Press the "ENT." button when showing [OTHER].
 4. Select "Detect" by press down "Arrow" button.
 5. Press the "ENT." button.
 6. Pressing the "Up" or "Down" arrow button, moves the cursor to the selected sensitivity.
- Off : Detect system off
Slow : Lower sensitivity detection
Normal: Standard sensitivity detection
Quick : High sensitivity detection
7. Press the "ENT." button.
Make your change and return to drive mode.



HELPFUL HINTS

12-1

PROBLEM	CAUSE	CORRECTION	PAGE
Does not start embroidering when pressing "START" button	Take up lever cover is open.	Close the take up lever cover.	10-4
Upper thread breaks	Machine not properly threaded. Needle inserted incorrectly. Thread tension too tight. Poor thread quality. Dry hook Empty stitches or continuous tiny stitches in design data. Thread is tangled in an upper thread cone.	Re-thread machine. Re-insert needle. Readjust thread tension. Replace with good quality thread. Oiling the rotary hook. Turn on stitch sweep function then read design data again. Un-tangle the thread.	4-6 4-1 8-1 10-1 5-2
Lower thread breaks	Bobbin threaded incorrectly. Bobbin wound unevenly or too full. Thread tension too tight. Dirt on the hook. Dry hook	Re-thread the bobbin. Rewind the bobbin. Readjust thread tension. Clean the hook. Oiling to hook.	4-5 4-4 4-4 10-2 10-1
Thread break lamp lights up despite thread not being broken (False thread breaks)	Upper thread is not passing around the detecting roller.	Please thread the upper thread correctly.	4-7
Machine skips stitches	Needle inserted incorrectly. Bent or blunt needle. Incorrect size of needle.	Re-insert needle. Insert new needle. Choose correct size needle for fabric.	4-1 4-1 4-2
Fabric puckers	Machine not properly. Bobbin threaded incorrectly. Blunt needle. Thread tension too tight.	Re-thread machine. Re-thread the bobbin. Insert new needle. Readjust thread tension.	4-6 4-5 4-1 8-1
Machine makes loose stitches or loops	Bobbin threaded incorrectly. Machine not properly threaded. Tension not adjusted properly.	Re-thread the bobbin. Re-thread machine. Readjust thread tension.	4-5 4-6 4-5,8-1
Poor tension balance	Bobbin threaded incorrectly. Machine not properly threaded. Dry hook	Re-thread the bobbin. Re-thread machine. Oiling to hook.	4-5 4-6 10-1
Poor design registration	Fabric not hooped correctly. Using elastic material. Hoop not installed into machine properly.	Set hooping correctly. Use correct backing. Set hoop correctly.	6-2,7-4 6-2 6-3,7-5
Needle breaks	Bent or blunt needle. Needle setting incorrect. Thin needle against material. Poor hooping.	Insert new needle. Re-insert needle. Change to thicker needle. Re-hoop fabric.	4-1 4-1 4-2
Machine runs with difficulty	Dirt on the hook race.	Clean the rotary hook. Oiling the rotary hook.	10-2 10-1
Machine will not run	Cord not plugged into electrical outlet. Power switch is not turned on. The power source fuse is breaking.	Insert plug fully into outlet. Turn on the switch. Change the power source fuse (6A) to a new one.	 3-5 3-1
will not turn on	Locking emergency button.	Release lock of emergency button.	3-7
Cannot see menu	Wrong setting of contrast.	Please adjust LCD contrast.	3-5

Color number

The Needle number (thread color) to be sewn can be set to each color number. For example, if the pattern is divided by a color change function at 2 places, 3 color numbers exist in the pattern. When the needle number is set to it's respective color number, the pattern is embroidered in 3 colors.

Memory pattern

Patterns stored in memory.

Start point of the frame

This is the point where the frame begins to move before starting embroidery.

Trace back

This is to move the frame and memory pattern in the reverse direction of sewing.

Trace forward

This is to move the frame and memory pattern toward the sewing direction.

Original point

The frame position where the machine embroiders the pattern from the beginning is automatically registered in the machine as the original point.

Communication speed

The communication speed between the machine and The pattern data output device (PC) if they are connected with a serial port. If the communication speed value becomes bigger, the speed becomes faster, however in this case a communication error could happen more easily. If you have a communication error often, decrease this value.

Data format

This is the format that the tape pattern data is converted into.

Color change stop

When color change stop is set to a color number, the machine embroiders the set color number and stops.

Zero stitch

This is a stitch that the move distance of both sidewise and lengthwise is "0" and the needle lands in the same position.

Conversion

The Angle of a pattern can be changed by 90 degree.

Reverse

The pattern can be reversed like a object appearing in a mirror.

BUILT-IN FONT LIST

12-3

Style 1

A B C D E	a b c d e	0 1 2 3 4
F G H I J	f g h i j	5 6 7 8 9
K L M N O	k l m n o	- , . ' /
P Q R S T	p q r s t	? ! &
U V W X Y	u v w x y	< > () _
Z	z	

Style 2

A B C D E	a b c d e	0 1 2 3 4
F G H I J	f g h i j	5 6 7 8 9
K L M N O	k l m n o	- , . ' /
P Q R S T	p q r s t	? ! &
U V W X Y	u v w x y	< > () _
Z	z	

Style 3

A B C D E	a b c d e	0 1 2 3 4
F G H I J	f g h i j	5 6 7 8 9
K L M N O	k l m n o	- , . ' /
P Q R S T	p q r s t	? ! &
U V W X Y	u v w x y	< > () _
Z	z	